

ASTP TECHNICAL AIR-TO-GROUND VOICE TRANSCRIPTION

PREPARED BY
TEST DIVISION
PROGRAM OPERATIONS OFFICE

(NASA-TM-X-72914) ASTP TECHNICAL
AIR-TO-GROUND VOICE TRANSCRIPTION (NASA)
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National Aeronautics and Space Administration
LYNDON B. JOHNSON SPACE CENTER
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INTRODUCTION

This document is the transcription of the technical air-to-ground (TAG) voice communications of the Apollo-Soyuz Test Project (ASTP) mission. The transcript is divided into three columns — time, speaker, and text. The time column consists of three two-digit numbers for hours, minutes, and seconds (e.g., 22 45 12). All times are expressed in Greenwich mean time (GMT) for the Julian dates shown at the alternate left- and right-hand corner of the page. The speaker column indicates the source of a transmission; the text column contains the verbatim transcript of the communications.

A series of three dots (...) is used to designate those portions of the text that could not be transcribed because of garbling. One dash (-) is used to indicate a speaker's pause or a self-interruption and subsequent completion of a thought. Two dashes (- -) are used to indicate an interruption by another speaker or the point at which a recording was abruptly terminated. Words given unusual emphasis by the speaker are underlined. Three asterisks (***) are used when clipping, static, or other electronic distortion obliterates the voice. Material enclosed within parentheses has been translated from Russian.

The ASTP mission began with the lift-off of command-service module 111 at 19:50:00.68 GMT (14:50:00.68 c.d.t.) on July 15, 1975. The crew splashed down in the Pacific Ocean at 21:18:27 GMT (14:18:27 c.d.t.) on July 24, 1975.

Speakers in the transcript may be identified as follows.

Spacecraft:

ACDR	USA Commander (Thomas P. (Tom) Stafford)
CMP	USA Command Module Pilot (Vance D. Brand)
DMP	USA Docking Module Pilot (Donald K. (Deke) Slayton)
USA	USA unidentified spacecraft speaker
SCDR	USSR Commander (Alexey Leonov)
SFE	USSR Flight Engineer (Valeriy Kubasov)
USSR	USSR unidentified spacecraft speaker
MS	Multiple speakers

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Mission Control Centers:

CC-H	USA CAP COMM (H = Houston)
CC-M	USSR CAP COMM (M = Moscow)
LCC	Launch Control Center
MCC-H	USA Mission Control speaker other than CAP COMM
MCC-M	USSR Mission Control speaker other than CAP COMM
PRESS	News media representative in building 2 auditorium

Other:

AA	Unidentified station
CT-(STA)	Comm tech (plus tracking station designation)
ELS	Earth landing system helicopter
NEW	USS <u>New Orleans</u>
PHOTO	Photographic helicopter
REC	Recovery helicopter
SWIM	Swim team helicopter

Suffixal designations (during transfer phases only)

-CM	Speaker in command module
-DM	Speaker in docking module
-OM	Speaker in orbital module
-DV	Speaker in descent vehicle

Transcription of these tapes was managed by Billie E. Johnson, Test Division, Program Operations Office, to whom inquiries regarding this document should be referred.

Day 196

TAG Tape 196-02/T-1
Time: 196:18:45 to 196:20:15
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19 50 01 ACDR And we have a lift-off.

19 50 04 ACDR And the clock is started.

19 50 06 ACDR And program 11. (Okay.)

19 50 10 ACDR Roger. Tower clear.

CC-H Roger, Tom. You got good thrust on all engines.
You're right on the money.

19 50 15 ACDR Roger. I got a roll program started, but not much.

CC-H Roger, Tom.

19 50 21 ACDR There she goes. Pitch program; a little shaky lift-off, but it's smooth as silk now, Dick.

CC-H Okay.

19 50 37 ACDR 30 seconds and we're on the way.

CC-H Roger, Tom. You're looking real fine.

19 50 50 ACDR 2 g's.

CC-H Roger.

CC-H Stand by for Mode I Bravo.

19 51 01 CC-H MARK. I Bravo.

ACDR Roger. I Bravo, 2 g's.

CC-H Roger.

CMP And cabin pressure's coming down.

CC-H Roger.

19 51 20 CC-H Apollo, Houston. You're feet wet and on your way.

ACDR Roger. Feet wet.

ACDR Man, it's the ... I ever flew.

CC-H Roger.

19 51 42 ACDR EDS AUTO, OFF; 2 ENGINE OUT, OFF; LV RATES, OFF.

19 51 46 CMP We've got an SM RCS A light on.

CC-H Roger.

19 51 53 CC-H Apollo, Houston. You're Mode I Charlie.

ACDR Roger. I Charlie, Dick.

CC-H That's affirm.

19 52 00 ACDR 3-1/2 g's.

19 52 04 CC-H Apollo, Houston; you're GO for staging.

ACDR Roger. GO for staging. 4 g's.

19 52 17 ACDR Inboard.

19 52 20 ACDR Outboards.

19 52 22 ACDR Staging.

CC-H Roger, Tom.

19 52 26 ACDR Okay, and that light is out on the IVB.

CC-H Roger.

19 52 32 ACDR We got acceleration.

CC-H Roger.

19 52 36 CC-H Apollo, Houston. We've had a PU - PU shift, and thrust is up on S-IVB. Looking real fine; right on the money.

ACDR Roger, Dick.

ACDR 48, 49, 50 - jett it.

19 52 52 ACDR Tower jett. There she goes!

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CC-H Roger. Tower jettison - -
ACDR Adios.
19 52 54 CC-H - - and you're Mode II.
ACDR Roger. Mode II.
19 53 00 CMP Okay, and we got the steam running with the water.
19 53 03 ACDR Guidance is initiated.
CC-H Roger. Concur.
19 53 38 ACDR At 3:30; onboard trajectory looks good, Dick.
CC-H Roger, Tom. Concur; you're looking real good.
ACDR Roger.
CC-H And, Tom, be advised we have been dropping out CMC data a little bit here on the ground, but the CMC is GO; you're doing fine.
ACDR I understand.
19 54 02 CMP Incidentally, Dick, we don't have that caution and warning on SM RCS A any more.
CC-H Roger, Vance. I copied that. Thank you.
19 54 23 CC-H Apollo, Houston. Coming up on 4-1/2 minutes, you're GO. And, Vance, we think that that was a package temp that was low. It's coming up within tolerance now, and you're looking fine.
CMP Okay, fine.
19 54 33 ACDR At 4:30, back to one-g acceleration and looking good, Dick.
CC-H Roger.
19 55 00 CC-H Apollo, Houston. At 5 minutes, you're GO.
ACDR Roger. 5 minutes. Looks good onboard, Dick. And we've got a beautiful sight.

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CC-H Roger. Wish I could see it.

ACDR Roger.

DMP Man, I tell you, this is worth waiting 16 years for.

CMP Got a beautiful ocean out - -

CC-H I believe - -

CMP - - here, Dick.

CC-H Roger. I believe all of that.

19 55 37 ACDR Okay, at 5:30, onboard trajectory looks beautiful.

CC-H Roger. Concur, Tom. You're right on the money.

19 56 00 CC-H Apollo, Houston. You're right on at 6 minutes; you're GO.

ACDR Roger.

19 56 18 DMP Okay. You've got OMNI Charlie.

CC-H Okay, Deke. Thank you.

19 56 59 CC-H Apollo, Houston. At 7 minutes, you're GO; and we're standing by to watch the gimbal motors.

ACDR Roger. Starting the gimbal motors. PITCH 1 on -

19 57 05 ACDR MARK it. That's a good one. YAW 1 on -

19 57 07 ACDR MARK it. That's good. PITCH 2 on -

19 57 10 ACDR MARK. YAW 2 on -

19 57 12 ACDR MARK. Both good.

19 57 22 CC-H Apollo, Houston. You've got four good gimbal motors, and the trims are great.

ACDR Okay, real fine. Thank you, Houston.

CC-H Roger.

19 57 50 ACDR That felt like a PU shift, Houston.

19 57 54 DMP At exactly 7:49.

 CC-H Roger, Tom.

19 58 00 CC-H And, Apollo, Houston. You're GO at 8 minutes; and
 you're right, that was PU shift, and the thrust is
 GO. You're right on.

 ACDR Roger. Everything looks good onboard. ...

 ACDR ... Trajectory looks good onboard.

 CC-H Roger. Concur, Tom. You're GO.

19 59 01 ACDR 9 minutes. Apollo's GO.

 CC-H Roger. At 9 min - at 9 minutes, you're GO.

 ACDR Roger.

 CC-H And, Apollo, Houston. We're predicting a guided
 cutoff at 9 plus 46.

 ACDR Roger. 9 plus 46.

 CC-H Stand by for Mode III Alfa.

 ACDR Roger.

19 59 28 CC-H MARK. Mode III Alfa.

 ACDR Roger. III Alfa.

 CC-H Stand by for Mode IV capability.

 ACDR Roger.

19 59 43 CC-H MARK. Mode IV capability.

 ACDR Roger.

19 59 46 ACDR SECO.

 CC-H Roger.

 ACDR And we were right in there.

CMP We're there.

DMP We is here.

19 59 55 CMP Okay. V_I , 25649; H-dot, minus 4; altitude, 83.2.

CC-H Okay, Vance. Thank you.

CMP ... according to the computer in an 89.4 by 83.1.

CC-H Okay. Thanks, Vance. We'll check it ourself.

CMP (We are now in orbit.)

20 00 48 CC-H Apollo, Houston. The range safety system has been safed, and you're in a GO orbit.

ACDR Roger. And it does look beautiful up here.

CC-H Apollo, Houston. In about 30 seconds we're going to have LOS from Bermuda, so we'll lose our S-band, but we'll keep you on VHF at Newfoundland.

ACDR Roger.

CMP Okay.

DMP Okay. And, Houston, could you doublecheck bat ... I'm not sure it untied. I'm still showing some amperage on it.

CC-H I'm sorry, Deke. You're going to have to say again, please.

20 01 26 DMP Yeah, bat bus ... When I came off the bat bus tie, I'm still showing some amperage. Could you guys confirm that it's in fact off?

CC-H Roger, Deke. You're okay. That's amperage from the EDS and when the - down at the bottom of the list, when you get the FUEL CELL REACTANTS VALVE to NORMAL, that'll go away.

DMP Thank you.

20 01 54 CC-H No problem.

20 02 34 CC-H And, Apollo, Houston. How do you read me on VHF through Newfoundland?

ACDR 5 by 5, Dick.

CC-H Okay. We've got you for about another 3-1/2 minutes.

20 05 06 CC-H Apollo, Houston. We're about 1 minute from LOS at Newfoundland. We're going to drop out, and I'll give you a call about 3 minutes from now for a short pass through Madrid. See you there.

DMP Okay, Dick.

CMP Thank you. We're just getting helmets and gloves off here.

CC-H Okay. We've gone around the room and looked at all the data we had during the launch phase, and you're looking real fine. No problems.

20 05 27 ACDR Super.

20 11 08 CC-H Apollo, Houston through Madrid. How do you read?

ACDR Loud and clear, Dick.

CC-H Roger. Read you the same. This is a short pass. We're not sure exactly how long it's going to last, but it will be about a minute. And ARIA is going to come up at about 55 minutes, so we'll see you there.

20 11 25 ACDR Okay.

END OF TAPE

Day 196

TAG Tape 196-03/T-2
Time: 196:20:15 to 196:21:45
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20 44 14 CC-H Apollo, Houston through ARIA. How do you read?
ACDR Roger; through ARIA. We're ... on page 15 of -
page 3-7 of the checklist ... maneuver.
CC-H Roger, Tom. The comm is pretty bad. Just tell me
again what page on the checklist you are.
ACDR 3-7.
CC-H Okay. And we'll be standing by.
20 44 36 ACDR Gee, we haven't completed parts of 3-4, 5, or 6 yet
either, Dick.
CC-H Okay.
20 50 24 CC-H Apollo, Houston. We're 1 minute from LOS ARIA.
I'll give you a call at the Vanguard at an hour
and 12 minutes.
20 50 30 ACDR Roger. Okay, Dick.
21 02 01 CC H Apollo, Houston. Vanguard for 6 minutes.
ACDR Okay. We're in - in attitude - going to be doing
the TD&E in 2 minutes, Dick. We're set up at
58:08 and counting.
CC-H Okay, Tom. Super. And, Deke, a reminder on the TV
camera. We don't have any way of monitoring it on
the VTR, so when you get turned around and get a
monitor picture, you might select the f-stop, as
required, and also PEAK instead of AVERAGE, if that's
required.
21 02 30 DMP Okay. We're sitting here looking at the monitor now,
but of course I don't see much in it. We'll keep
an eye on it.
CC-H Roger. Understand.
21 04 08 ACDR We're off the IVB.

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ACDR That panel's really going away.

CC-H Roger, Tom.

CC-H Apollo, Houston. One cleanup on the switches on panel 3. S BAND AUX TV we need to OFF.

21 05 46 DMP AUX TV. It's OFF.

CC-H Okay, thanks, Deke. And also we've lost a telemetry parameter on O₂ TANK 1 QUANTITY. If you could read - give us an onboard readout, we'd appreciate it.

DMP Stand by 1.

CC-H Okay. No hurry.

ACDR Dick, we got a problem. It's so bright in that background, I can't see my COAS.

CC-H Roger. Copy.

21 07 08 CC-H Apollo, Houston. We're about 30 seconds from LOS. I'll give you a call - real short pass at Rosman at 6 - at 1 plus 38.

ACDR And I finally got the COAS back in. Finally.

21 07 24 CC-H Roger, Tom.

21 27 19 CC-H Apollo, Houston at Rosman for a real short pass; about 1 minute. How do you read?

ACDR Roger. Got a good hard dock. Looks real lined up, and all the latches are good.

CC-H Okay. Super, Tom. This pass is real short, so I won't bug you now. There are two or three things that we want to get from you, like the P52 data and the delta - EMS delta-V results, but I can pick them up at Newfoundland, and that's coming up at about an hour and 42 minutes.

ACDR Okay. Yeah. We're kind of busy now. We'll pick it up there, Dick.

CC-H Okay. No problem.

21 27 49 DMP Couple of quickies you can look at, Dick. We're running high on SUIT TEMP here - a little over 70 degrees and also the GLYCOL EVAP on the SECONDARY LOOP is off scale high. Should be below 60.

CC-H Okay, Deke. We don't have data here, but we will be looking at those. I've got a couple of other parameters I'm going to need a readout from you on, also.

DMP Okay.

CC-H See y'all later.

DMP Let's see, I can give you the 52 data here, if you've got time to copy it.

CC-H We're going over the hill, Deke. Let me get it later.

21 28 24 DMP Okay.

21 31 38 CC-H Apollo, Houston. Newfoundland for 6 minutes.

CMP Copy.

ACDR Page 4-5 in the Launch Checklist connecting - Vance is connecting the DM umbilicals.

CC-H Roger, Tom. How do you read me?

ACDR Loud and clear.

CC-H Okay. Be advised, we're going to be sending one of our nominal commands here to the booster to enable the extraction maneuver to occur per the nominal Flight Plan.

ACDR ... and for your trajectory people, we - we each had to ... Deke and I had to ... down below us and out in front of us. ...

CC-H Apollo, Houston. Tom, you're fading in and out, and I'm only getting about half the - your conversation.

ACDR Right. I'll call you in a minute.

CC-H Copy.

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21 33 05 ACDR Yeah, Houston. Right now we're in the middle of this checklist. Deke's power is off. His comm power is off, but, also, it looks like Vance's headset went out, but we'll call you on that later. Over.

CC-H Okay, Tom. Copy. And, Tom, that in - that transmission I heard loud and clear.

ACDR Okay.

21 34 35 CC-H Apollo, Houston. We still have about 3 minutes here at Newfoundland. If somebody has time to read me the P52 data and Launch Checklist, that's fine. Otherwise, we can pick it up at Madrid.

ACDR Deke can get it.

DMP Okay, ready, Dick?

CC-H Yeah. Go ahead, Deke.

21 34 50 DMP Okay. Star 27 and star 43, all balls; minus 36, minus 1, plus 137; and we torqued at 35 minutes and 20 seconds.

CC-H Okay, Deke. Copy. Thank you very much.

CMP And, Dick, CP here. We found out why I lost comm. When I took the tunnel hatch number 1 out, why we dragged it through the tunnel and it turned off my HEADSET switch here on panel 98.

CC-H Okay, Vance. Read you loud and clear now. One more thing. We've got a - we've lost a couple of TM parameters. If somebody's up around panels 2 or 3 and you can read us two quan - two points, we'd appreciate it.

ACDR Go ahead, Dick. I'm available.

CC-H Okay. We need 0₂ TANK 1 QUANTITY.

21 35 55 ACDR TANK 1 QUANTITY is reading zero.

CC-H Okay. We're reading off scale low. Also, we don't think we have a problem there, but it's TM. Also, we need QUAD Alfa HELIUM TANK TEMPERATURE.

ACDR Getting - it's reading zero, also.

CC-H Okay. And the same thing applies to that one.

CC-H Apollo, Houston. We're 1 minute until LOS. I'll give you a call at Madrid at an hour and 51 minutes.

21 36 29 CMP 1:51.

21 41 05 CC-H Apollo, Houston. Madrid for 3-1/2 minutes.

DMP Okay, Dick. And it's worth noting on those gage discrepancies that they were reading okay when we went through our systems check so those things have dropped to zero here quite recently.

CC-H Okay. We copy and we'll be taking a look at that, Deke. We do think that the - both the primary and secondary loops are working okay, and it'll be running a little warm for a little while, but we think it'll be doing fine.

DMP Okay.

CC-H One think we wanted to get from you was the results of the EMS delta-V test that you ran.

21 41 43 ACDR Okay, EMS delta-V test was perfect.

DMP That was minus 10.5, Dick.

CC-H Okay, copy. And, incidentally, one thing - couple of things on the Flight Plan. We'll be getting the GDC/IMU comparison results down at the Vanguard. And also down at the Vanguard at about 2 hours and 42 minutes - 44 minutes or so, we plan on delaying the PSM activation until tomorrow. The reason is because of the switch manipulations that we went in - went through on the pad, we think we probably have a little helium bubble in that line, and by doing it tomorrow we'll have the evening to think about what's the best way to get it out. We probably - we may be able to get it out without doing an extra purge burn.

DMP Okay.

CC-H In any case, it's no problem.

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DMP Roger.

CMP And, Dick, we have the umbilicals connected to the DM, and the hatch is back in again. And all latches were good.

CC-H Okay, Vance, Thank you.

21 43 22 CC-H Apollo, Houston. We're about a minute from LOS. We'll see you at ARIA at 2 plus 27 and when we got another - got a little minute here, we can't help but ask you how Vance and Deke are both liking the zero g.

DMP It's super, man. Just can't believe it.

CMP Really savoring every event up here, Dick. It's really great.

CC-H Sounds like fun. Wish I was there.

DMP You bet. So do we. Tell you one thing is these TV cameras don't work any better in zero g than ...

21 43 51 CC-H (Laughter) Roger.

END OF TAPE

Day 196

TAG Tape 196-04/T-3
Time: 196:21:45 to 196:23:15
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22 17 46 CC-H Apollo, Houston through the ARIA. How do you read?
USA Loud and clear. ... ready to go.
CC-H Roger. Again, the comm here is pretty poor, so we're just standing by.
USA Understand.

22 24 33 CC-H Apollo, Houston. We're 30 seconds from LOS ARIA. Vanguard at 2 plus 43.

22 33 24 CC-H Apollo, Houston. Vanguard for 5 minutes.
ACDR Okay. Houston, Apollo. Extraction was nominal.
CC-H Super, Tom. Sounds real good. Then if somebody - Apollo, Houston. You still there?

22 33 52 ACDR Go ahead, Dick.
CC-H Roger, Tom. If somebody has a chance during this pass, I'd like to get the BMAG GDC/IMU comparison results.
ACDR Okay; Deke will give it to you.
CC-H Okay; and as I said before, we're not going to do the PSM activation here. We'll pick it up later.
DMP Okay. Want to go with the BMAG?
CC-H Okay; I'm standing by to copy.

22 34 25 DMP Okay. NOUN 20 is 359.86, 016.48, 358.15; ... are 001.6, 017.2, 359.0.
CC-H Excuse me, Deke. You - we had some extra noise on the line, and I copied the roll, pitch, and yaw, but - of the NOUN 20 - but nothing else. Go ahead.
DMP Okay. GDC is 001.6, 017.2, 359.0. And delta-T is 30:00.
CC-H Roger. Sounds good. And I'm assuming that was BMAG 2. Is that right?

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DMP That's affirmative.

22 35 18 CC-H Okay. Great.

22 37 04 CC-H Apollo, Houston. We are about 1 minute from LOS.
Goldstone comes up at 3 hours and 1 minute. See
you there.

ACDR Okay.

DMP Those Earth obs guys will be happy to know - -

22 37 29 CC-H I'm sorry, Deke. Say again.

22 51 06 CC-H Apollo, Houston. Goldstone for 5 minutes.

ACDR We've maneuvered to ACM for the nominal attitude.

CC-H Okay, Tom. And if you'll give us ACCEPT, we'll
give you a good state vector, and I've got a
preliminary ACM pad when you're ready to copy.

22 51 27 ACDR Okay. You've got ACCEPT, Dick. Go ahead.

CC-H Okay; and I understand you are ready to copy the
preliminary pad, Tom.

ACDR Give us about 10 seconds.

CC-H Oh, okay. Tell me when you're ready. No hurry.
We've got about 5 minutes here.

ACDR Okay; we're ready.

CC-H Okay. Starting with NOUN 33. 003:41:01.59;
plus 018.1, plus four balls, plus 000.2; 179,
193, 001; 005.8; 00:01. 0.6, 12.3. The weight:
32879; trims: plus 0.80, minus 0.52. Go ahead.

22 52 55 ACDR Okay. 003:41:01.59; plus 018.1, plus all balls,
plus 000.2; 179, 193, 001; 005.8; 00:01. 0.6,
12.3; 32879. Pitch trim: 0.80. Yaw trim: minus
0.50. Over.

CC-H Roger, Tom. That's a good readback, and you'll
notice on there that the delta- V_C tailoff is not
13.0, and that's because on this short burn - for

this particular short burn, there was just no way that we could set it up to come out that way, but that number is correct.

ACDR I understand. Thank you.

CC-H Okay; see you later.

22 54 11 CC-H Apollo, Houston. Our uplink is complete. You can go back to BLOCK. Thank you much.

ACDR Roger.

22 55 32 CC-H Apollo, Houston. We're 30 seconds from LOS. I'll give you a call in Newfoundland at 3 plus 12. See you there.

ACDR Roger. 3 plus 12. Thank you.

CC-H Roger.

23 02 50 CC-H Apollo, Houston. Newfoundland for 6 minutes.

ACDR ...

CC-H And, Apollo, be advised, we do not have an update for the backup GDC aline pad and the star acquisition pad today. And also, if you - I've got some different high-gain angles if you have maneuvered to the preliminary pad attitude for ACM.

ACDR Okay, Dick. Go ahead.

CC-H Okay, these are good for the - the attitude for the preliminary pad: pitch, minus 78; yaw, 147.

23 03 35 ACDR Pitch, minus 78; yaw, 147.

CC-H Roger. And naturally I'm talking to you on - VHF in Newfoundland, and we'll - I'll talk to you on S-band when we get locked up.

ACDR Okay; I'll maneuver to that new attitude.

CC-H Okay.

DMP For your information, Dick, when we powered up that ATS, we got a horrendous background noise, and it seems to stay there.

CC-H Roger, Deke.

23 05 16 DMP Okay. Houston, how do you read through ATS?

CC-H I'm clear, Deke. How me?

DMP Cleared up; no noise. It's amazing.

CC-H How about that?

DMP We're getting an echo from you and - but we surely got rid of all that background noise since you came on the air.

CC-H Incidentally, Deke, I remember from one of the tests that we did down at the Cape when Crip was down there, that he had the same - same thing. When locking up, he had a tremendous loud noise, but as soon as we got a good lock, it went away.

DMP That's exactly what it is.

CC-H Okay.

23 09 45 CC-H Apollo, Houston. When you do this upcoming P52, here, just in the event PICAPAR doesn't work for this attitude, we think stars 42 and 45 will work.

23 10 56 CC-H Apollo, Houston. How do you read?

ACDR Read you 5 by, Dick. How do you read us?

CC-H Okay. I read you loud and clear, too. Comm tech said you'd called, and I didn't hear you. I wasn't sure whether we had a problem or not. I did make one transmission. When you do this P52, if PICAPAR doesn't work, we think stars 42 and 45 will.

ACDR Roger. I'll be right with you and copy that.

CMP And we wanted you to report to the Cape that they put a hitchhiker aboard.

CC-H Okay.

CMP We found a super Florida mosquito flying around here a few minutes ago.

CC-H (Laughter) Okay. Maybe you could think of a new experiment to do with him.

CMP No. I'm going to feed him to our fish.

CC-H Okay.

ACDR And, Houston, Apollo. Your preliminary pad will be the final pad for ACM. That's affirmative. Over.

CC-H Tom, I'm not sure - we have a final pad in work, and I'm not sure whether we are going to need to pass it up to you or not. We will have it ready here in just a second.

23 12 02 ACDR Okay. I've already loaded the preliminary one in the computer in case you didn't have a final.

CC-H Roger. I understand. We were watching you do that, and - and - but we do think we may have a final pad. I'll know here in just a minute.

ACDR ...

23 14 06 CC-H Apollo, Houston. Be advised you're GO with the preliminary ACM pad. Also, we're going to get ready to do about 10 minutes of a VTR dump. During the dump, you'll lose downvoice. In case I need to call you, I'll keep upvoice, and we're going to stop the dump a couple or 3 minutes prior to the burn. So I'll be - we'll have good voice during the burn.

ACDR Okay.

23 14 29 CC-H Okay. See you later.

END OF TAPE

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23 25 40 CC-H Apollo, Houston. We've concluded the VTR dump, and we're standing by here again with you waiting for the burn.

CMP Roger. We're about to - to do it very shortly.

CC-H Okay. We're standing by.

ACDR Okay.

ACDR Okay. PITCH 1 on.

23 25 59 ACDR MARK it. YAW 1 on -

23 26 02 ACDR MARK it.

CC-H Apollo, Houston. We had - we - you have four good gimbal motors and good trims.

CMP Rog. Same here. Looking good. We're all set.

CC-H Right.

23 31 28 CMP Okay, Dick, are you with us in reading our DSKY?

CC-H I'm with you, Vance, go ahead. I'm - we're looking at the DSKY - -

CMP Okay, our residuals are 0 plus 10. EMS is reading minus 10.8 after the burn, but we set it up at 7.2, and we'll explain it later.

CC-H Okay, Vance, got it.

CMP Okay, we were on attitude and on time. And the first burn was sort of like getting hit by a - bumped by a truck in back.

CC-H Roger. When you guys get squared away and have the time, how about reading me the P52 data.

CMP Okay, Deke will pass it on. Just a second.

DMP Okay, we had star 42 and 45, all balls; minus 37, plus 9, plus 17; and we torqued at 03:26.50.

CC-H Okay, Deke. Copy. Thank you very much.

23 32 59 CC-H And, Apollo, Houston. We have not completed the VTR dump. We'll be getting that - back to that here in a few minutes; so when you get to the step that says turn the VTR POWER to OFF on panel 400, skip that.

DMP Okay.

CC-H And, Apollo, Houston. We're going to - we're going to start up the VTR dump again, so you'll lose downvoice, and I'll give you a call when we're back up.

23 33 28 DMP Okay.

23 48 10 CC-H Apollo, Houston. We've completed the VTR dump, and we're back up here for the ATS again for about the next 10 minutes.

DMP Okay.

CC-H Apollo, Houston. Now that we've completed the VTR dump, we can go ahead and get the VTR POWER switch, just that one switch on panel 400, to OFF.

DMP Okay, VTR POWER to OFF.

CC-H No, I'm sorry. Excuse me, Deke. Do not do that. We're still rewinding the tape recorder.

CC-H Apollo, Houston. Incidentally, I've got some high-gain angles for you. For the next ATS pass that comes up, either - you can write them either in the Rendezvous Book or the Flight Plan at about 4 hours and 42 minutes.

23 51 08 ACDR Go ahead.

CC-H Okay, Tom. The pitch is minus 66 and the yaw is 078.

ACDR Roger. Minus 66 and 078.

CC-H Roger. And be advised the VTR TV was real good. Just a reminder; don't forget that when you're taking that with INTERLEAVER switch ON, your hot - your intercom is getting put on the video.

ACDR Roger.

CMP Hope it wasn't too bad.

CC-H No, it was colorful. No problem.

ACDR Did you get the TV of TD&E, Dick? Over.

23 51 53 CC-H Yeah, that was it, Tom. It was. We got some - some on-orbit TV before you switched the camera, and then we watched the TD&E. It looked like a spectacular shot as you backed out of there.

ACDR ...

Day 197

00 13 18 ACDR Hello, Houston; Apollo. How do you read?

CC-H Apollo, Houston. How do you read?

ACDR Roger. Loud and clear.

CC-H Okay, Tom, if you'll give us ACCEPT, we'll update
your state vector, and I've got an NCl preliminary
pad for you.

00 14 59 ACDR Houston, Apollo.

CC-H Apollo, Houston. I'm sorry, we dropped into a real
short keyhole there, and how do you read me now?

ACDR Roger. Loud and clear, Dick.

CC-H Okay, I read you with a little bit of background
noise, but I can hear you okay, Tom, and I've got a
preliminary NCl when you're ready to copy.

ACDR Okay. We're ready to copy.

CC-H Okay, starting with NOUN 33. 005:38:29.00; plus 063.5,
plus four balls, plus 022.0; 181, 053, 001; 054.2;
00:03. The weight, 32818; trims, plus 0.71, minus
0.45. Go ahead.

ACDR Roger. 005:38:29.00; plus 063.5, plus all balls,
plus 022.0; 181, 053, 001; 054.2; 00:03; weight,
32818; plus 0.71, minus 0.45.

CC-H Roger, Tom. That's a good readback. Let me tell
you just a word just about the trajectory here. We
have - we've gotten some tracking that shows a little
bit of out-of-plane. However, the FIDO thinks that
this plane change is so small, and he doesn't have a
good handle on it. We've decided we will not do a
plane-change maneuver tonight. There may be an out-
of-plane component in the - in a phasing maneuver
tomorrow, or we might have to do one at some point
tomorrow. But, at any rate, there will be no plane-
change maneuver tonight.

ACDR Understand. Real fine. Thank you.

00 16 31 CC-H Okay. Also, Tom, we do not have any CMC data here, so we've decided not to uplink the state vector in the blind; you can go back to BLOCK.

CMP Roger. BLOCK.

CC-H Okay. Two more things. We're ready for the VTR POWER switch, that's just one switch on panel 400, to go OFF. And we're wondering how you're coming on doffing the suits.

ACDR You cut out, Houston.

CC-H Okay, Tom, we wanted the VTR POWER switch to OFF, and we were wondering how you were doing in getting the suits off.

ACDR Okay, Vance's is off, and Deke's putting his in the bag, and mine's part of the way off.

CC-H Okay. I'll leave you alone.

ACDR Okay.

00 17 17 CMP And we have the VTR POWER switch OFF.

ACDR Okay. VTR POWER switch is OFF.

CC-H Okay. Fine. Thank you.

00 18 00 CC-H Apollo, Houston. We are going LOS here at Hawaii in about 15 seconds. I'll give you a call at Newfoundland at 4 plus 44. See you there.

00 34 59 CC-H Apollo, Houston through Newfoundland. How do you read?

CMP Loud and clear, Houston.

CC-H Roger. We're standing by, and we'll have you on the ATS when the time comes and we get locked up. See you there. And also the - you're GO for the NCL with the preliminary pad. There's no final pad required.

CMP Understand, GO, NCL, with preliminary pad. We won't be getting a final.

CC-H That's right, Vance. Incidentally, after we get locked up on the ATS and have good data, we'll get your target load and state vector in. We did not get it in, as you know, at Hawaii.

00 35 41 CMP Understand.

00 36 39 CC-H Apollo, Houston. How do you read on the ATS?

CMP Loud and clear on ATS.

CC-H Okay. If you'll give us ACCEPT, we'll get you a good state vector and the target load.

CMP Okay. You've got ACCEPT and POO. And we're getting an echo from you.

CC-H Okay. I'm reading you loud and clear, Vance.

00 40 27 DMP That was another HIGH O₂ if you guys saw it.

CC-H Roger, Deke. Copy.

CMP We get one every 10 minutes.

CC-H Rog.

DMP I'm eating my Gus Grissom memorial corned beef sandwich and it tastes delicious. ...

CC-H (Laughter) Roger.

CMP And, Dick. When's it looking like the shift to PSM will occur?

CC-H What we're talking about, Vance, is doing a procedure - since we're not going to do the plane change tonight, what we're talking about is doing a procedure at about 6 hours and 40 minutes, which is during the middle of an ATS pass, to square away the - our little minor worries about the helium bubble, and then we'll just shift to the PSM after that procedure is completed.

CMP Okay.

CC-H And we'll be getting back to you very shortly about what that'll be. But we figured we'll let the NCI burn come and go.

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00 41 51 CMP Roger.

END OF TAPE

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ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

00 43 59 CC-H Apollo, Houston. For somebody in the LEB, on panel 230, we'd like the UP TELEMETRY switch to center, UP TELEMETRY.

DMP Okay.

CC-H Incidentally, we're - we're having dropouts on the data so we're holding up on uplinking your loads until we have a - we can monitor them real well.

DMP Okay. We've seen you do some uplinking, among other things.

CC-H That's right. We're just trying to take it kind of slow. State vectors are in, and target load will be up when we can.

DMP Roger.

CC-H Okay. As I was talking, we got the target load in also, so you can go back to BLOCK.

00 44 38 DMP Roger. BLOCK.

CC-H Apollo, Houston. Bo is back from his trip back from the Cape, and we're getting ready to hang over - to hand over. You guys have sure had a good start, and I'll see you in the morning.

CMP Okay, Dick. It has been nice talking with you here. We'll see you in the morning.

CC-H Okay. See you then.

DMP Thank you.

ACDR Thank you, Dick. It's been a great day.

00 46 50 CC-H Roger that.

01 02 22 DMP Houston, Apollo.

CC-H Apollo, Houston. Go ahead.

DMP Oh, okay, Bo. Hey, would you like a little data on P52?

CC-H Roger. Go ahead.

DMP Okay. Stars: 2 and 42. It was all balls, and then a minus 33, minus 11, minus 2. It was at 5:35:15. That must have been 5:05. I can't read my own writing.

CC-H Roger. I copied stars: 2, 42, all balls; minus 33, minus 11, minus 2; 5:35, and I didn't get the last number.

DMP Yeah, should have been 5:05:15.

CC-H 5:05:15. Roger. Copy.

DMP Roger. You made a quick trip over there, Bo.

CC-H It's been quite awhile since you people have been up there.

DMP Doesn't seem that way.

CC-H And, Deke, while I have you, do you have a DM delta-P?

DMP Oh, golly.

CMP Yes, we have that, Bo. It's minus 0.3, and that's the value that it's built up to since we put the hatch back in.

01 04 10 CC-H Roger. Understand. Minus 0.3 and, it's built up to that since you put the hatch in.

CMP Roger.

DMP For your information, the old biostack is running, and we're ...

CC-H Say again, Deke. We didn't copy that.

DMP Roger. Vance activated the biostack, and we are now about to start the ZFF.

CC-H Roger.

CMP Advised that the biostack was activated at 4:58, Bo. And the light was on after it was activated.

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01 04 59 CC-H Understand; 4:58 for the biostack.

01 08 26 CMP Houston, Apollo.

CC-H Apollo, Houston. Go ahead.

CMP Bo, we've noticed the last hour or 2, it seems like the temperature is increasing a little bit in the cabin. And it's not too hot yet, but it is up on the gage to about 77. Do you have any suggestions for cooling it down?

CC-H Roger. We'll look on that. We understand that it has been increasing, and it is now about 77.

CMP Roger. I wouldn't say that it's anything serious, but we're kind of looking ahead. If we had a way to get it a little cooler now, we'd probably like it.

CC-H Understand.

CMP Okay, Bo. We're going to start the maneuver, if it's all right with you guys.

CC-H Understand.

01 10 13 ACDR Okay; we're maneuvering, Bo.

CC-H Roger. Be advised that you will probably lose comm with us.

ACDR Okay. You must have made a fast trip back to Houston. Over.

CC-H Yeah, well, we stopped at ..., but it has been 5 hours and 20 minutes since you launched.

CMP How did the launch look, pretty good?

CC-H Oh, it was great. It was a nice day; you could see staging on the television just fine, although you couldn't see it from the ground out the window too well. But it was really beautiful.

DMP Man, you should have seen it from where we were.

CC-H Yeah, I'll bet you it really looked great to you, Deke.

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DMP Certainly did.

DMP There may be something else that is almost as good, but it's been so long since I've seen it, I couldn't compare.

CC-H Deke, we're having a bit of a problem understanding you. We think it might be that your mikes have slipped out from in front of your lips.

01 11 22 DMP Just as well.

01 27 07 USA Houston, Apollo. How do you read?

CC-H Apollo, Houston. We read you clear but weak.

USA Okay, ... look real good ...

CC-H Roger. Understand you're standing by for the burn. And just reminder to bank B.

01 27 35 USA Roger. Understand.

01 45 18 CC-H Apollo, Houston through Hawaii for 2 minutes. How do you read?

DMP 5 by, Bo.

CC-H Roger. I have a couple of items. Is there someone free to copy?

DMP Yeah, go ahead.

CMP Go ahead, Bo.

CC-H The LM ascent data which goes on page 1-6 of the Rendezvous Book - I'm sorry, that's 1-7 of the Rendezvous Book, is 27818.

CC-H And we're going to do a purge burn, and that's going to be done at about 6:30, and we'll have more information when we get into ATS coverage.

01 46 07 ACDR Roger. Purge burn at 6:30. Would you repeat the first one?

CC-H Roger. LM ascent data on page 1-7, which is about the center of the right-hand side; CSM weight, 27818.

CMP We had a keyhole. Please repeat. We had a cutout.

CC-H Roger. That's 27818.

CMP Okay, 27818, Bo?

CC-H Roger. And on panel 377, we'd like you to put the GLYCOL TO RADIATORS SECONDARY to the NORMAL position.

CC-H Did you copy that, Apollo?

DMP Roger. Copy that.

01 47 07 CC-H Roger. And we're flowing coolant through the secondary loop to cool you off some. And we'll get back with that problem when we have next communications pass.

DMP Okay. You're intermittent, Bo. We're only reading you periodically.

CC-H Roger. Let me try that again. We're doing that to cool you off and we'll have more information when we have another comm pass.

DMP Copy.

DMP Hey, could you repeat the position you wanted on 377, please, Bo?

CC-H That was GLYCOL TO RADIATORS SECONDARY to NORMAL.

CC-H And, Apollo, Houston. We'll see you again at Bermuda at 6:15.

DMP 6:15. And Bo, for your information, our water quantity gage is oscillating continuously ... a little bit, then it quits.

CC-H Roger. It's the water quantity transducer we understand is bad.

01 48 28 DMP Well, just oscillating and it's doing it only in the WASTE position; only at about 60 to 80 percent.

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CC-H That was 60 to 80 percent, right.

DMP Yes, 60 to 80. Just a constant oscillation.

01 48 51 CC-H Roger.

02 06 23 CC-H Apollo, Houston through Bermuda. How do you read?

DMP 5 by, Bo.

CC-H Roger. Would you please go ACCEPT so we can give you the rendezvous REFSMMAT.

DMP Okay, you've got her.

CC-H And if you - if I can have someone's ear for a second, I'll explain a little more about the cooling procedure.

DMP Okay, we're all listening.

CC-H Roger. We're going to hold this configuration for awhile, to see if that helps. And we will probably also activate the secondary evaporator later on this evening so it cools the cabin down well before sleep.

DMP Sounds like a good idea.

02 07 05 CC-H Okay, now I have a procedure here for this PSM purge, and what we're going to do is essentially turn off the RCS quads, turn on the PSM, and then simultaneously with both hand controllers, command same - opposite rolls for 12 seconds to burn out any possible bubble that may be there.

ACDR Yeah, okay. We got it copied down, Bo. We're going to turn off four RCS quads, turn on the PSM, and then opposite rolls using the two hand controllers for 12 seconds.

CC-H Roger. And we have a significant procedure here, but we'd like to go through it over Ascension, and go through it step by step with you so that if we lose ATS coverage, we'll be able to still have you at Ascension.

02 07 59 ACDR Okay.

CC-H They're just afraid that when you go opposing rolls, there may be some residual rate that might put you out of our ATS window.

ACDR Okay.

CC-H Apollo, Houston. You can go back to BLOCK, and as soon as you can get that P52 out, that would be good, so that we can then work on this purge procedure.

ACDR Okay. Stand by.

02 08 44 ACDR And you have BLOCK, Bo.

CC-H Roger.

CC-H And, Apollo, Houston. We're standing by for high-gain acquisition when you have a chance.

ACDR Okay.

02 09 40 DMP Okay, we're showing good signal on ATS. You guys reading us?

CC-H Apollo, Houston. Say again.

DMP Okay. We're transmitting on ATS, I think. Are you reading us?

CC-H Roger. Reading you loud and clear.

02 09 58 DMP Okay.

02 14 24 ACDR Houston, Apollo. Are you reading my DSKY?

CC-H Apollo, Houston. We are not reading your DSKY because we're dumping the DSE data, and also we have quite a bit of interference, and we an - It's difficult to understand your transmission.

02 14 42 ACDR Okay, Bo.

END OF TAPE

Day 197

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

02 15 00 ACDR Okay. Vance just finished option ...

CC-H Apollo, Houston. Our communication is so bad we're not reading you.

02 18 49 ACDR Houston, Apollo.

CC-H Roger, Apollo. Houston here. We read you loud and clear now.

ACDR Roger, Bo. We completed the P52 option 3 and also option 1.

CC-H Roger. We did not read that because we were dumping data, so if you could give them to me, I'd appreciate it.

ACDR Ready to copy?

CC-H Ready.

02 19 11 ACDR Okay, on the P52 option 3; stars 01, 41; NOUN 05, four balls 1; X, minus 39; Y, plus 3; Z, plus 33; torqued, 6 hours 24 minutes and 0 seconds.

CC-H Understand. Stars are 01, 41, four balls 1; minus 39, plus 3, plus 33; 06:24:00.

02 19 40 ACDR Roger. Now on option 1, star 01, star 41, the same ones; NOUN 05, all balls; NOUN 93, plus 35.4, plus 42.3, plus 14.0; and we torqued at 6 hours 27 minutes and 40 seconds. Over.

CC-H Understand: 01, 41, all balls; plus 35.4, plus 42.3, plus 14.0; 06:27:40.

ACDR Roger.

CC-H Thank you.

ACDR And I guess we're coming up to Ascension now. We're ready to copy the - the purge burn procedure.

CC-H Roger.

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02 21 03 CC-H Apollo, Houston. This procedure is fairly long,
and we think it might just be easier if we let you
do it as we read it over Ascension.

ACDR Okay.

CC-H As you prefer though.

ACDR Go ahead.

02 21 23 CC-H Okay, this is the PSM activation first. It's SCS
CONTROL, MODE CMC FREE.

02 21 33 ACDR Okay, SCS control is CMC in FREE. All right.

02 21 38 CC-H SM RCS QUAD HELIUM A, B, C, and D, closed. Talk-
back, four to barber pole. And we're not at Ascension
yet so don't do them until we get there.

02 21 50 ACDR Okay. Understand. Next step, SM RCS QUAD HELIUM,
four closed; talkback barber pole, and we're
holding on.

CC-H Roger. And do you want me to continue with the
procedure then and you copy it?

02 23 13 CC-H Apollo, we have data through Ascension.

CC-H Apollo, Houston. How do you read?

CC-H Apollo, Houston. Over.

CC-H Apollo, Houston. Over.

CMP Go ahead, Bo.

02 24 25 CC-H Roger. We have Ascension now, and you can start on
that procedure, and I'll continue when you're ready.

02 24 32 CMP Okay, we've been hearing you all along. You haven't
heard us, and we're closing four SM RCS QUAD HELIUMS
now.

CC-H Roger.

CMP And that's complete.

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02 24 46 CC-H And the next is the SM RCS PROPELLANTS, four, A, B, C, and D, closed. Talkback, eight, should be barber pole.

CMP Houston, do you read me?

CC-H Roger. We read you. The next step is SM RCS PROPELLANT, A, B, C, and D, closed; talkbacks: eight, barber pole.

CC-H Apollo, Houston. Did you copy my last?

CMP Houston, Apollo. How do you read?

CC-H Roger. We read you loud and clear. How do you read me, sir?

CC-H Apollo, Houston. How do you read us now?

CC-H Apollo, Houston. How do you read us?

CMP Loud and clear.

CC-H Roger. We read you now also.

CMP We've been reading you.

CC-H I'm sorry then for making so many calls. We haven't been reading you.

02 27 20 CMP Roger. Just meant that it must have been some kind of a mixup through the station or something. Okay, we did close SM RCS QUAD HELIUM, Bo.

CC-H Okay, and now - -

CMP And four barber poles.

02 27 33 CC-H - - and now we need the SM RCS PROPELLANT A, B, C, and D closed. And talkback, eight should be barber pole.

02 27 44 CMP Okay, we have four SM RCS QUAD PROPELLANTS closed, with eight barber poles.

CC-H Roger. Then the SM RCS PSM HELIUM, OPEN; talkback, gray.

02 27 59 CMP Okay, PS HELIUM, OPEN; talkback, gray.

 CC-H And SM RCS PSM PROPELLANT A, B, C, and D, OPEN;
 talkback; four, gray.

02 28 16 CMP Okay, complete. We have PSM PROPELLANT A, B, C,
 and D, OPEN, and four gray.

02 28 23 CC-H And then the SM RCS PSM MANIFOLD ISOLATION, OPEN;
 talkback, gray. And we'd like you to do it, but it
 already should be done.

 CMP That's right. It's a verify, but I'll hit it again.
 And it's gray.

 CC-H And then BMAG MODE, three, RATE 2, and that's a verify.

02 28 46 ACDR Verified, Bo.

 CC-H AUTO RCS SELECT, 16, MAIN A, MAIN B.

02 28 58 ACDR They're selected to 16, MAIN A, MAIN B.

 CC-H And then ROTATION HAND CONTROLLER NORMAL POWER,
 two of them to AC/DC.

02 29 11 CMP Two AC/DC - two NORMALS, AC/DC.

 CC-H Roger. And MANUAL ATTITUDE ROLL to ACCELERATION
 COMMAND, and PITCH and YAW in RATE COMMAND.

02 29 26 ACDR Okay, ROLL in ACCEL COMMAND, PITCH and YAW in
 RATE COMMAND.

 CC-H Roger. And then listen here for just a second.
 What we'd like you to do is, using the - the rota-
 tion hand controllers 1 and 2, simultaneously com-
 mand plus and minus roll for 12 seconds of continuous
 command time, and that will be eight jets on. And
 try to get them on and off at the same time. Of
 course, you might have some variations, and it's
 possible you might lose comm with us.

02 29 57 CMP Understand. And we're still in CMC FREE. Under-
 stand we should go to SCS now, is that affirm?

CC-H Negative. We'd like you to do it in ACCEL - -

CMP Okay.

CC-H - - COMMAND.

CMP Okay, understand, CMC.

CC-H And then after the burn, we'd like you to go MAN
ATT ROLL to RATE COMMAND, SCS CONTROL MODE to CMC
AUTO and allow the DAP to damp the rates.

02 30 27 CMP Roger. Understand.

CC-H And then - -

02 30 29 CMP And we're ready to start a plus and minus yaw for
12 seconds.

CC-H And then let - It's a plus and minus roll for
12 seconds, and let me finish the procedure in
case we happen to lose comm with you

CMP Roger; roll.

02 30 43 CC-H And after the AUTO - after the burn, do the AUTO
RCS SELECT ROLL, four to OFF, RHC NORMAL POWER 1
OFF, and then do a VERB 49 maneuver back to the
sleep attitude that's listed in the Flight Plan
at approximately 6:25, which is 018, 170, 330.

ACDR Roger. We've got that.

CC-H Okay. We're watching for your burn.

02 31 16 CMP Okay. We'll start the plus and minus roll in a
few seconds.

CC-H Roger. And Houston - Apollo, try to be careful
not to modulate that, so you don't get any differ-
ential roll out of one hand controller or the other.
We're watching.

02 31 44 ACDR Complete.

CC-H Beautiful is the word we get down here.

CMP Okay. Looked good here. No big rates.

CC-H Roger. That's just what we thought.

02 31 58 ACDR We're already maneuvering back to our sleep attitude.

02 33 12 DMP And, Houston, Apollo.

02 33 31 CC-H Apollo, Houston. If someone has a second, we'd like the burn report from NCl.

02 33 38 ACDR Okay, I've got it here. Stand by.

02 33 50 ACDR Okay, on NCl, it was on time. The residuals, minus 0.1, plus 0.1, minus 0.1. Delta-V_C after trim was 14.1. Everything was all right.

02 34 06 CC-H Roger; copy. I have a couple of items - -

ACDR ...

CC-H - - Apollo, for the presleep checklist if somebody has a chance to copy. When they do, just give me a call.

02 34 23 CMP Stand by.

ACDR Stand by.

02 34 31 CMP Houston, while we're digging this sleep checklist up, I have another thing, a little nagging problem here. We don't know if we have a problem or not, but it concerns the urine system. We've hooked up the urine system, but it is either dumping overboard at a very slow rate, or not at all. We find that it's such a slow rate that there's still some urine left in the collector after several minutes, after it has been used. We wonder if somebody down there knows what the flow rate should be?

CC-H Roger. We copy your problem.

CMP And advise that we followed the procedure and verified the URINE DUMP HEATERS, ON, and all that sort of thing.

CC-H Roger. I understand.

02 35 37 DMP Okay, Bo. I'm ready to copy your preflight [sic] checklist data.

CC-H Roger. The first one is in the CSM systems checklist on page 1-47: number 9, the VTR cooling activation. And on page 1-48: number 12, the USBE cooling activation.

02 36 12 DMP Okay, got it.

02 36 14 CC-H And, like you, we see both of those pieces of equipment getting slightly warm. And while in STDN contact, you could do this now. On panel 274, we would like circuit breaker DM POWER, MAIN B, CLOSED. And we'll call you when to open it - and it's so that we can get some data from the DM.

02 36 38 DMP Okay, you want it CLOSED now?

CC-H Roger. We have data, and we can watch it.

02 36 44 DMP Okay, it's CLOSED.

CC-H And on panel 181, CM 1 TV STATION POWER switch OFF, and CM 2 TV STATION POWER switch OFF; and that's on the presleep checklist.

DMP Okay, you want them OFF now?

02 37 10 CC-H Yes, we do want them OFF now, and we would like to know if they were ON at this time.

02 37 19 DMP No, neither one of them were ON.

CC-H Roger. Thank you very much.

02 37 30 CC-H And those are all the notes we have for you.

DMP Okay, ...

CC-H And, Apollo, Houston. We've gotten enough - -

DMP ...

CC-H - - DM data. We can - you can pull the circuit breaker on panel 274, DM POWER MAIN B to OPEN.

DMP Okay. Coming OPEN.

02 38 03 DMP MARK it.

CC-H Thank you.

DMP And if you want your scientific report for the day, zero g does not seem to disturb the adult female mosquito, who's flying about here beautifully.

CC-H Roger. Understand. (Laughter) Understand you're going to feed him to the fish.

DMP Well, we thought we would feed him ourselves for a few days, and then we'll feed it to the fish.

CMP Another alternative is to bring him back alive and give him a pair of astronaut wings.

CC-H Roger. And has our activation of that valve down on 377, GLYCOL TO RADIATORS SEC, made any difference in the cabin temperature?

02 38 51 CMP Yes. It's beginning to improve. Feels much better.

CC-H Thank you.

CC-H And, Apollo, Houston. We'd like to know if you think that that's going to be a good enough thing, or if we should try something else to make the cabin still cooler.

02 39 19 ACDR Yeah. The trend is starting to get cooler, Bo. If it keeps on, it should be in good shape.

02 39 24 CC-H Understand. Thank you.

02 41 36 CC-H Apollo, Houston. I have an answer to one of your questions. The urine will dump 1.25 pounds per minute.

CMP Okay. Then, we've got somewhat of a problem with this urine system because it isn't dumping anything close to that rate.

CC-H Okay. And we're looking into the problem further.

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CMP Okay. If - it may turn out that we can use a backup scheme here pretty quick. We might have to use a bag or something because it's been quite awhile.

CC-H Understand.

CMP Or how about dumping without the filter?

CC-H Understand. We're looking at it.

02 42 25 CMP Okay.

02 42 27 CC-H And the other is that we need a waste-water dump, and we'd like you to time it instead of using the gage. And we would like a 4-minute waste-water dump, and you can start any time.

02 42 39 CMP Understand.

02 47 07 CC-H Apollo, Houston. Over.

ACDR Go ahead.

CC-H The first suggestion on the urine dump is to close the WASTE STOWAGE VENT valve while you are dumping urine, and see if that helps.

02 47 25 ACDR Okay.

02 47 26 CC-H And the other is that there is a filter in our - R-11, and we don't want you to dump without a filter, but you may try a new one.

CMP Okay. A new filter of the same type. Roger.

CC-H Yes. But we'd like you to try the WASTE STOWAGE VENT valve first.

CMP Understand.

02 47 48 DMP Okay. We've already turned that off.

CC-H Apollo, Houston; understand. You said you've tried to dump with the WASTE STOWAGE VENT valve off, and it didn't seem to help any.

02 48 06 DMP No. We haven't. I just turned it off now, Bo.

CC-H Okay.

02 48 10 DMP We'll have to check it here in a minute.

02 49 32 ACDR Okay, Bo. The WATER DUMP is OFF.

CC-H Roger. Understand.

02 50 34 ACDR Bo, we changed the filter and that greatly improved it.

CC-H Roger. Understand - -

ACDR ...

02 50 38 CC-H - - Thank you.

02 55 08 ACDR Houston, Apollo.

CC-H Apollo, Houston. Go ahead.

ACDR What country are we over now, Bo? We didn't have time to get the map out.

CC-H You're coming up over Australia right now.

ACDR Okay. Thank you.

CC-H You're welcome.

02 55 35 CMP How's it going over in Soyuz, Bo? Any - anything new? I suppose those guys are asleep by now, huh?

CC-H Roger. They've been put to bed.

02 55 55 CC-H Vance, looks like the only problem they've had so far is a problem with one of their TV cameras, and they're working on that to see if they can get it to work.

CMP Okay. Well, it's good that they haven't had any more problems than that.

02 56 11 CC-H Roger.

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02 56 43 CC-H Apollo, Houston. Just asked you a question on that waste dump. We understand it's working properly now. Did you do both of those steps, or did not the WASTE STOWAGE VENT make any difference and then you put the filter in?

02 57 02 DMP Well, I don't think it's working yet, Bo. I was just about to experiment with it, but it still seems to be full of liquid.

02 57 09 CC-H Understand.

DMP ...

02 57 13 CMP We think there's some suction in the device because if you close the cap for a little while and then put it to VENT, you hear a hissing which is quickly over again, but it must be a very small flow - flow restriction of some kind.

02 57 32 CC-H Understand, and we - -

CMP How about - -

CC-H - - just have a little while until LOS, and we'll be seeing you at Guam at 7:16.

02 57 41 CMP Okay.

03 06 32 CC-H Apollo, Houston through Guam for 4 minutes. How do you read?

DMP Roger. 5 by, Bo.

DMP How do you read us?

CC-H Apollo, Houston. We read you, but very weakly. Would you speak louder, please?

03 06 50 DMP Roger. Read you 5 by, Bo.

CC-H Roger. How was your test?

03 06 57 DMP Nothing seems to be working. We'll try her later. Right now, we've diverted to the food intake mode.

03 07 07 CC-H Roger. Enjoy yourself.

DMP Thank you.

03 07 11 CMP And we went to HEATER B on URINE DUMP. Thought you wouldn't mind. Just in case A wasn't working.

03 07 22 CC-H Roger.

03 07 27 CC-H And, Apollo, Houston. We don't think that's it. Our temperatures seem to indicate the heaters are working.

03 07 34 CMP Okay.

03 08 38 CC-H Apollo, Houston. On that urine receptacle, we have the suggestion, although you may have already done it, to take the URA off the hose and see if there's flow, which indicates that the URA would have a blockage.

03 08 54 DMP Okay, Vance ...

03 08 57 CMP Okay, Bo. Try it first opportunity.

03 09 00 CC-H Roger.

03 10 27 CC-H Apollo, Houston. There's less than a minute until LOS. We'll see you at MILA at 7:45.

03 10 33 DMP Okay, Bo.

03 XX XX CC-H Apollo, Houston. Through MILA and ... We may have a keyhole here in about a minute. How do you read?

USA ...

CC-H Roger. First is, we'd like you to go ACCEPT.

USA Roger.

CC-H And I have a note. On the next ATS acquisition, try to acquire at the normal time but leave the antenna in MANUAL and WIDE until 15:36:30. Then go to REACQ and NARROW.

USA Okay, have you had any trouble with the S-band plugging up?

CC-H Well, this is the one of two ATS passes when the Moon's position may interfere with ATS acquisition and this procedure is to get around that.

USA Okay, say again the time when we go to NARROW.

CC-H 15:36:30; but, of course, we're going to be updating the clock right now.

USA Roger.

CC-H Apollo, Houston. How do you read?

USA Loud and clear.

CC-H Roger. Did you have a chance - have a chance to do that URA test?

USA Not yet. We're right in the middle of the eat period. When we get this all squared away, that'll be our first priority.

CC-H Roger. We won't bother you while you're eating, then. Call us when you're finished.

03 XX XX USA Thank you.

END OF TAPE

NOTE

No time or voice was recorded on the tape from 03 10 33 forward; the transcript printed was typed as received from the mission commentary provided by the Public Affairs Office.

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ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

03 57 07 CC-H Apollo, Houston through ATS. How do you read?
ACDR Loud and clear, Bo.
CC-H Roger. We're standing by, and we've got some information here. We'd like this to be our last pass of the evening so you people can get to bed.
ACDR Okay. Stand by. Let me get the Flight Plan out.
CC-H Oh, negative. We don't want to interrupt your meal. Just when you're finished, give us a call.
ACDR Okay.

03 57 57 CC-H Apollo, Houston. There are about 35 minutes remaining in this ATS pass.
ACDR Okay, Bo.

03 58 22 ACDR Okay. I see you're giving us the STDN uplink, jet-on monitor loads, and all that.
CC-H Roger. They're in work.

03 59 33 ACDR Okay, Bo. And you want me to go ahead and close that DIRECT O₂ valve that's listed back in 7:40. It's in the middle of an eat period. We're running late on the eat period because of some problems we had with the ...
CC-H Roger. I'll check.
CC-H Apollo, Houston. Roger; go ahead and close it.

04 00 10 ACDR DIRECT O₂ is CLOSED.
CC-H Roger. And the cabin temperature seems to be stable now. If it's acceptable, leave the system the way it is configured. If it's too warm, you're clear to activate the secondary evaporator as on S/1-18. But if you do activate it, it should be deactivated before bedtime.

ACDR Okay.

CC-H And, Apollo; how is the cabin now?

ACDR It's better. But it still can be a little cooler. It's coming down some, though.

CC-H Roger. Are you going to activate that evaporator, sir?

ACDR Yeah. We'll go ahead and activate it for a short period of time.

CC-H Roger. We'd like to see that during this pass if you could do it.

04 01 25 ACDR Okay. I'm going to go ahead and power down this power down check. Let's turn the BMAG OFF.

CC-H Roger.

04 01 45 ACDR B - BMAG 1 POWER is OFF.

CC-H Copy.

04 02 25 CC-H And, Apollo, Houston. We've already done one waste-water dump, so you don't have to do another one as called out at 15:30 in the Flight Plan.

ACDR Okay.

04 03 03 CC-H Apollo, Houston. Are you finishing up there to answer a couple of questions?

ACDR Yeah, go ahead. We're - we're still munching and working. Go ahead.

CC-H Okay. It was about the URA test. Have you had time to accomplish that?

ACDR No, we haven't. We're still just right in the middle of the - of the eat period, Bo.

CC-H Okay. If - -

ACDR To get the first meal squared away and all the trays, it runs lots longer than the Flight Plan calls for.

04 03 29 CC-H We kind of figured that. You have used that filter and it can be stowed in a fecal bag in R-11.

ACDR Okay. That's the used filter - -

CC-H That - -

ACDR The one we used in the fecal bag in R-11.

CC-H That's right. That's for the used filter.

04 03 47 ACDR Understand. Thank you.

04 04 21 CC-H And, Apollo, Houston. This is another discussion item. We heard you say that the EMS read 14.1 after the trim on NC1, and this indicates about a 1.1-foot-per-second overspeed, not shown by the G&N. And could you tell us anything about that, or could you tell us anything about the EMS setup that may have accounted for that.

04 04 58 ACDR Hang on, Bo. I'll go back and look at the data.

CC-H That was NC1 and you told us, "On time, minus 1, plus 1, minus 1, and 14.1."

ACDR That's right; minus 14.1 ... We - we set the - EMS delta-V was set for 54.2.

CC-H Understand; 54.2.

ACDR That was before the burn. That's what it was set at.

CC-H Understand.

CMP On NC1, we set the EMS up initially before the burn just per the pad to - what you said. And on the burn before that ACM, however, we set the - we set it up to 7.2 instead of what you had on the pad, which was 5 point something.

CC-H Roger. Understand NC1, the EMS was set up per pad, but on the ACM, it was set up for 7.2. Thank you.

CMP And that was mainly because we were sort of wanting to set it up according to the G&N total delta-V, and to be sure that we didn't - if we had an SCS burn, that we didn't go through zero on the EMS before the burn started.

CC-H Roger.

04 10 11 CC-H Apollo, Houston. You can go BLOCK on the computer, and you have a GO to synchronize with the clock.

ACDR Roger. After we get all the food trays off ... we'll do that.

CC-H Okay.

04 10 44 CMP You getting any TV, Bo, of the meal?

CC-H Negative. We are receiving no TV.

04 10 52 CMP Okay.

04 28 10 ACDR Hello, Houston; how do you read?

CC-H Apollo, Houston. Go ahead.

ACDR Okay, Bo. We're going to start the - activate that secondary ... Then we'll go right into troubleshooting on the urine system.

CC-H Roger.

04 30 43 ACDR Houston, the S-band's coming through pretty loud and with static. But we got the secondary evap on.

CC-H Roger, Apollo. We see it.

04 33 15 CC-H Apollo, Houston. Over.

ACDR Go ahead, Houston.

04 33 25 CC-H Roger. Have you had a chance to do that URA test?

04 33 37 ACDR It's at work right now. The secondary evaporator is activated, Bo, and we're at work on the urine system right now.

CC-H Okay. We saw the activation of the secondary evaporator, and we were just wondering about this urine system before we went over the hill. Got about 3 minutes until LOS.

04 34 21 CC-H And, Apollo, Houston. If there's someone who is not working on the urine system, I've got another item or two.

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Page 5

ACDR Okay, Bo. Be right with you.

CC-H Okay.

04 34 44 CMP Houston, Apollo.

CC-H Go ahead.

CMP We - we took this device off the urine system, and checked the hose. And there is a very small vacuum on the hose, and we think we improved the vacuum on the hose by taking off the bleed valve on the waste stowage outlet. And maybe it'll help if - if we keep the BATTERY VENT CLOSED - the bleed off the waste stowage and then try to use this system.

CC-H Roger. Copy.

CMP We'll - we'll proceed on and let you know.

CC-H Roger. Do you think it'll be acceptable to go to bed with?

CMP Pardon?

CC-H I mean, can you people go to bed comfortably with its present situation?

CMP We think so. (Laughter) We're working on it.

CC-H Okay. And we've noticed the OPTICS POWER is on, and we'd like the VERB 74.

CMP Okay.

04 35 50 ACDR You want a VERB 74? You got the VERB 74.

04 35 57 CMP And OPTIC - OPTICS POWER's OFF.

CC-H Roger. We see the VERB 74. There is 1 minute until LOS, and your wakeup time in the morning will be at 24:30, which is about 40 minutes late because of STDN coverage.

ACDR Roger. At 24:30.

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CC-H And, Apollo, Houston. We think that allowing a little air to flow through the urine system will help it.

04 37 05 CC-H Apollo, we're just about to go LOS, but we'll see you here at Guam in about 2 minutes.

04 37 10 CMP Okay; fine.

04 40 17 CC-H Apollo, Houston through Guam for 2 minutes.

04 41 03 CC-H Apollo, Houston through Guam for just a little over a minute.

CMP Roger.

04 41 23 CC-H Apollo, Houston through Guam for 1 minute. We will have LOS and see you at Goldstone at 16:41, but we will not call. You can call us if you wish.

CMP Okay. We'll probably send you down a presleep report. And we'll be - we'll just about be ready to sack out then, Bo.

04 41 44 CC-H Roger. Thank you. And - -

CMP We'll - and we'll probably be able to give you a final status of the urine system up here about that time, too. It's a little more optimistic looking now. It has - we have our optimistic and pessimistic moments up here.

04 42 09 CC-H Roger (laughter); understand.

05 09 22 CC-H Apollo, Houston through MILA for 3-1/2 minutes.

ACDR Bo, we're in the process of taking the probe out and putting the cryo freezer in the tunnel.

CC-H Roger; understand. And we'd like to remind you here before you go to bed to turn off the secon - secondary evaporator. And if somebody's got a pencil, I've got some new ATS angles for you.

ACDR Stand by for just a minute, please.

CC-H Okay.

05 10 34 ACDR Bo, go ahead.

CC-H Roger. For this next pass, you normally wouldn't have any, but they are minus 1 and 257 and then just REACQUIRE and NARROW and leave it that way for the night.

ACDR Okay. Pitch, minus 1; yaw is 257. You say leave it that way in NARROW and leave it for the night.

CC-H Right - Roger. And it should be left in REACQUIRE and NARROW.

ACDR Roger. REACQ and NARROW.

05 11 12 CC-H And one last question before we leave you and that is, what was the resolution on the urine system?

ACDR Well, it looks like it's starting to work better now. We pulled the - that waste stowage - you know, disconnecter we've been using to bleed out to the cabin to enrich the O₂ that shared the vacuum line with it, and we have a better vacuum with that on.

CC-H Understand.

05 11 39 CMP Houston, Apollo.

CC-H Go ahead.

CMP Let me give you a couple of things on the presleep checklist.

CC-H Ready to copy.

CMP Okay, BAT C volts are 37, PYRO BAT A volts are 37, and PYRO BAT B volts are 37.

CC-H Roger. C, PYRO A, and PYRO B; all 37.

CMP Rog. And we've done all steps except the following. We have not cleaned the suit circuit return screen behind panel 382 because we think it's a short time, and we've - we're holding on the waste management overboard drain and that sort of thing until we're all through for the evening. And we're just now putting the freezer - or the - yeah, the tank in the tunnel. That's about it.

CC-H Roger. And there's about 30 seconds until LOS.

CMP Roger.

CC-H And we're going to say good night now unless you
need to talk to us again at Quito or when we get
into ATS coverage.

CMP Okay. See you in the morning. Or somebody.

05 12 54 DMP Good night.

CC-H (Good night.)

END OF TAPE

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TAG Tape 197-04/T-8
Time: 197:05:15 to 197:06:30
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

05 22 32 ACDR Hello, Houston; Apollo.

CC-H Apollo, Houston. Go ahead.

DMP All right, Bo. We got a problem. We can't get the probe out to stick that wonderful little freezer up there.

CC-H Understand. You can't get the probe out.

ACDR Yeah, Vance will tell you about it. Here - -

CMP Okay, Bo. Everything in the probe removal checklist on the cue card is going - has been going great up through step 11. Step 12 is "Capture latch release, tool 7." You insert it in the pyro cover. You turn it a 180 degrees clockwise to release the capture latches. Well, here's where the problem is, and let me explain it to you. If - do you have somebody there that knows the probe that can listen?

CC-H Roger. Go ahead.

05 23 27 CMP Okay, as I look in the back of the probe - in other words, at the back of the pyro cover, I'm looking with my flashlight through the hole where I insert this tool, and there's something behind the pyro cover that's in the way that's preventing me from putting this tool all the way in. And as I look at it, it's - it's actually one of the pyro connectors. It happens that this tool has to go down through the pyro cover in between, normally, some pyro connectors. But one of these pyro connectors has rotated such that it's in the way, and I can't put this tool in.

CC-H Roger; understand.

CMP Now I suppose that one thing I could do is take the cover off - the pyro cover off - and I've got proper tools to do that.

05 24 34 ACDR Bo, what it's coming down to is a decision we ought to make pretty soon. We've been up pretty late and this whole thing about sticking the cryo freezer up

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there came about because of the ventings. And either we're going to stay up another 3 or 4 hours wrestling that probe or else we're going to call it quits.

CC-H Roger. We copy and we're talking about it right here now.

CMP Incidentally, I stuck a pencil down in - or a pen down in there to see if I could easily move that pyro connector out of the way, and it doesn't seem to want to move.

05 25 13 CC-H Understand.

05 28 04 ACDR Houston, Apollo.

CC-H Apollo, Houston. Go ahead.

ACDR Okay, Bo. Looking up here at the mechanical mechanisms involved, it's obviously - it's going to take quite a bit of coordination with you people down there, and it's going to take quite a bit of time. And what I'm proposing is right now we just put the hatch back and go like we were going to originally. Just leave the little old freezer right here, because we'll spend 4 or 5 hours working on that bear.

05 28 28 CC-H Roger. We agree with you. We think we'd like to bump up the pressure of the O₂ in the cabin and sleep with it that way, and we're looking at the problems right now.

ACDR Well, except - yeah, we got a problem. We can't get the hatch closed.

CMP Hatch 1 will not go back in, of course, unless we go through a process of trying to retract the probe so that it'll let the hatch fit. How would it be if we slept with the hatch on?

CC-H Roger. We'll get to you with a suggestion here in just a couple of minutes, Vance.

CMP Okay.

05 29 21 CC-H Apollo, Houston. We concur with your suggestion not to work on that this evening. We just want to look

for a configuration so that you can sleep with the freezer in the cabin.

05 31 26 CC-H Apollo, Houston. Over

ACDR Go ahead.

CC-H Roger. What we'd like you to do is to close the over - overboard dumps, if you're finished with the urine system, then take off the lid to the cryo freezer, boost up the cabin pressure to 5.5, replace the lid on the cryo freezer, and that should be an acceptable sleep configuration.

ACDR Okay. Now, let's go over that again. When we're finished with the urine system, go - put that QD back on the waste vent.

CC-H Negative.

ACDR How about repeating that, Bo?

CC-H We'd just like you to close off those vents - the waste stowage vents - -

CMP Yeah. What you want us - yeah, what you want us to do is close the vents, that's overboard drain and the - well, the battery and the waste, all vents down on - on the panel R-11. You'd like to have us pump the - take the top off the cryo freezer, pump the cabin pressure up to 5-1/2 psi, put the top back on, and that should be a safe configuration.

CC-H That's right, and the procedures for that cryo freezer are on page 1-3 of the Experiments Checklist, number 10, if you need them.

CMP Okay.

CMP Bo? Houston?

CC-H Apollo, Houston. Go ahead.

05 33 57 CMP Roger. Just more information regarding the probe. Whenever we do something with that in the morning, or whenever - It looks like I can take off the fairing on the back to move this little connector out of the way if I retract the probe. There are

three screws that allow you to take this fairing off - pyro cover, they call it. And - but there's another - and they're easy, but there's another little screw down on the side that looks like you can only get at if you have the probe retracted. So, if the approach is to take that fairing off, why that's just some information for you. The probe is now in a retracted state.

05 34 43 CC-H

Understand. You looked like you could take off the fairing and the pyro cover by loosening three of the screws, but there's another screw that might require the probe to be retracted.

CMP

That's correct. And it's not retracted now, but it would have to be retracted, it looks like.

CC-H

Roger. Understand.

ACDR

Okay, Bo. And you want the pressure bumped up now, right? Before we shut the freezer.

CC-H

Roger. After you've opened it, we'd like you to bump the pressure up and then close the cover again.

05 35 18 ACDR

Okay. I got DIRECT O₂ on. Pressure's coming up.

CC-H

Apollo, Houston. And we'd like to remind you again to close all of those overboard vents if you have not done so.

CMP

Okay. We're doing that.

ACDR

Okay, Bo. Could you brief us on - In the past, you said we weren't supposed to have the cover open - off for over 40 seconds, and we're holding it while we're bumping the pressure here.

CC-H

Roger. Keep it open until the pressure is equalized and then replace the pressure - then replace the cover.

ACDR

Okay. If you've got a digital readout, Bo, you might help us. Looks like I've got about 5-1/8 pounds per square inch. If you - you got a better readout down there than we have, and you've got telemetry.

CC-H

Roger. We'll give you a call.

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ACDR Okay. Thank you.

05 38 13 ACDR We're reading about 5.253, Bo.

05 38 21 CC-H Roger. We read 5.23.

05 39 17 ACDR And I'm reading about 5.4555 on the gage now.

05 39 24 CC-H Roger. We read 5.43.

05 39 48 CC-H Apollo, Houston. We read 5.50 now. You can shut off the DIRECT O₂.

05 39 53 ACDR DIRECT O₂ off, Bo.

CC-H And when the cover goes back on the cryo freezer, torque the bolts down with the tool, if you have it.

ACDR Roger.

CC-H Apollo, Houston.

ACDR Go ahead.

05 42 02 CC-H Roger. We'll be working on the probe tonight and we're sure we can figure out some way that you'll be able to get it out of there in the morning. And have a good night's sleep. And one last item, and that is the SECONDARY EVAP CONTROL. We need it OFF before you go to bed.

ACDR Will do it. Thank you, Bo.

05 42 18 CC-H Good night.

END OF TAPE

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TAG Tape 197-05/T-9
Time: 197:06:30 to 197:08:00
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ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

REST PERIOD - NO COMMUNICATIONS

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Day 197

TAG Tape 197-06/T-10
Time: 197:08:00 to 197:08:25
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

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REST PERIOD - NO COMMUNICATIONS

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ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

12 47 40 (Music: "Good Morning Sunshine" by Chicago)

12 48 19 CC-H Good morning, Apollo. We're talking at you through the Vanguard. Got you for 5 more minutes.

DMP Hello down there. You reading us?

CC-H That's affirmative, Tom. Good morning.

DMP No. This is Deke. Good morning.

CC-H Oh, good morning. Good morning, Deke.

DMP Mighty pleasant wake-up music.

CC-H You guys up and moving around yet?

DMP No. We weren't until you called.

CC-H Well, that's good, glad you're getting plenty of sleep. The - as soon as you get the sleep rubbed out of your eyes, I have a couple items for - before we go over the hill here to make sure that we got good comm at the next ATS pass.

DMP Okay. Give me about 10 seconds and I'll take it.

CC-H Okay. No, I just - you don't need to write it down or anything. I just want to talk to you, but we got about 3 or 4 minutes here, so no rush.

DMP Okay. Go ahead.

12 49 43 CC-H Okay. When you get in and take a look at your Flight Plans for this morning, you'll notice that the normal stuff scheduled under the AC for terminating the "jet on monitor" and then proceeding on down through a VERB 49 maneuver - and it's listed at 24:00 hours. We'd like to make sure that we do get that maneuver in prior to our scheduled acquisition at - of the ATS - which is scheduled for 24:50; and it is currently 24:30.

DMP ...

12 51 27 CC-H Okay. We're a couple of minutes from LOS and next station contact will be through the ATS at 24:48. I might remind you, this morning, it's called out for you to take the WASTE STOWAGE VENT valve to VENT, and due to the problems we had with the urine dump yesterday - we recommend that you delay that until you guys are finished using the facilities. Also, we'd like to hear how they're working a little bit later on.

ACDR Okay. It worked okay - I guess the last time I tried it last night. We'll fill you in shortly.

13 14 37 CC-H Apollo, Houston talking at you through the ATS for 45 minutes.

CC-H Apollo, Houston. AOS through the ATS for 45 minutes.

DMP Roger. Read you 5 by ...

DMP Houston, how do you read?

CC-H Read you loud and clear, Deke.

DMP Okay.

CC-H How are things going up there this morning?

DMP Oh, we're just kind of getting regrouped here since we woke up.

CC-H Deke, I'm sorry. You're - you're barely readable.

DMP Is that any better?

CC-H Oh, yes. Much.

DMP Okay, got to get my mike in closer again.

CC-H Appreciate it.

13 15 56 CC-H Know you guys are trying to get everything pulled together this morning. We've done a little investigating into the problem Vance ran into with the probe last night, and like he basically came up with - we know what to do about it and know what the problem is, so whenever everybody gets all pulled together, we can talk about that a little bit.

DMP Okay, that's encouraging. Stand by. I'm going to put on a headset right now. I'll try to get breakfast in a few minutes.

CC-H Okay. There's no rush at all. You guys get your morning business taken care of. One other item for the morning, we'll - some time when you get it all pulled together - we'll need the morning status report, too.

13 16 35 DMP Well, I can give you that right now since we're talking about it. Just a second.

CC-H Okay. You're getting kind of far away from that tube again.

DMP Okay. Ready for status, Dick - -

CC-H Ready to copy.

DMP You read me now?

CC-H Yes, sir. Read you loud and clear. Go ahead.

DMP Okay. I'll give you a status report on the AC. He ate everything except - let's see here - one shortbread - three shortbread cookies. Comment: All the cookies were crumbly; uneatable. Then, as far as PRDs, got a 1001; about 7:15 sleep, good; no medication; and he's full of water.

CC-H I didn't copy that about the water.

13 18 01 DMP Okay. CP ate everything except fruit cocktail and had a lemonade in addition. He couldn't find it; that's the reason he didn't eat it. And his PRD is reading 480 and he had about 7 hours of sleep; the guesstimate is fair; and he took two scop/Dex yesterday. Yeah, that was strictly prophylactic, we should note. He had no symptoms at all, and didn't have any indication that he really needed them, but he just took them for advice. And fluids, he estimates about 50 seconds on the water gun. Okay, and the DP ate everything but the steak yesterday. And the PRD reads 1001; and sleep - it's hard to guess, - 5 to 6 hours of super sleep; no medication; and water, I don't know, 14-16 gulps, I guess. Anything else you need?

CC-H Okay. The only thing I missed there was Tom's fluid intake. Would you repeat that again, please?

DMP Yeah. He's full of water.

CC-H Full of water. Understand.

13 20 43 CC-H DP, Houston. Just to make sure if we understand on those PRDs, we need five-digit indications, and can we assume that there were zeros in front of that, or what?

DMP You were cut out by Moscow. Could you give me that one again?

CC-H Okay. We under - we need five-digit indications on the PRDs, and can we assume there were zeros in front of those numbers that you read me this morning?

DMP Well, I thought there was a 6 in front of mine. Stand by and I'll see if the other guys can see anything else.

CC-H Okay. Appreciate it if you would go back and take a look at those, and we do need the - all six digits, please. I'm sorry. All five digits.

13 23 09 DMP Houston, we're getting an awful lot of yakking between the comm techs here on the ...

DMP Okay, Crip; if you're still reading, you can put a 1 in front of Tom's reading on the PRD.

CC-H How do you read me now, Deke?

DMP Read you okay.

CC-H Okay, fine. I just copied a 1 in front of Tom's reading, and I need to get also clarification on Vance's and yours. And we had a dropout there momentarily through the ATS, and we're back with you again now.

DMP Yeah, what happened is we had a couple of comm techs between someplace and Moscow yakking away there for a while. ...

CC-H We're working on that; squared away.

DMP Okay, Crip. How do you read?

CC-H Reading you loud and clear, Deke.

DMP Okay. Vance's PRD is 48029.

CC-H Okay. 48029.

DMP That's affirm.

13 26 24 CC-H Okay. And I'm standing by for yours.

DMP Oh, I thought I gave you 5.

CC-H All right, you said you thought it was a 6. Can I - is that correct?

DMP I'll look at it again. Yes, it still looks like a 6.

CC-H Okay, understand, 61001.

DMP Right.

13 27 07 CC-H Okay. I guess that's got all that.

DMP We're trying to get going on a BAT A charge here.

CC-H Okay, fine. Incidentally, awhile ago when we dropped out of ATS, we - there were two things there I guess - we've got a little problem, and that every time we change a mode down here to set up for a tape recorder dump and a few other things, we're going to lose you briefly on - through the ATS - on voice and I'm going - we'll try to give you a call and let you know that's going to occur, but what you were hearing on the comm techs was not supposed to occur and we are going to try to square that away.

DMP Okay.

DMP Okay, Crip. We're charging the BAT here and I'm reading about 2 and a quarter amps but only 33 volts.

CC-H I copy. 2.4 amps and 33 volts?

DMP Actually, about 2.2 - 2.3 amps. According to our checklist, the voltage should be higher than that.

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CC-H Okay. I'm being informed here, Deke, that it's going to start up slow and be that way about 15 or 20 minutes. Then it'll come up.

DMP Okay. Hey, and Crip, also we're going to turn on the secondary evaporator in here. It's still pretty warm and trying to get things cooled off a little.

CC-H Okay. I understand. You did activate the secondary evaporator? Or did not?

13 29 24 DMP We haven't yet, but we are going to.

CC-H Okay. We - let us take a look at that for a minute and get back with you then.

DMP Okay.

CC-H DP, Houston; you got a GO on going ahead and activating the secondary evaporator.

DMP Okay, thank you.

13 30 41 CC-H Incidentally, Deke, last night I guess Bo called up to you about hooking up suit hoses to the VTR and the ATS S-band equipment, and we saw that still setting fairly warm last night. We assumed that that was not done. Is that correct?

DMP Yeah, you are right, that wasn't done. I guess we must have got distracted with the probe business up there.

CC-H Okay. No big sweat. I guess what we're going to get later is to get you to hook the hose up to the VTR and hold up on the S-band in that we are going to need the other two hoses for mixing with the docking module later on.

DMP Okay.

13 31 32 CC-H And when you all do have an opportunity to hook that up, well, if you'll give us a status report on - that you have done it, we'd appreciate it.

DMP Okay. It's the mundane things up here, Crip, that are eating our lunch. You know, like that darn urine thing, and it took us about 2 hours to eat last night. Just all the folderol involved in that ...

CC-H Yeah, I appreciate that, yeah. Getting it all squared away initially is - going to do it. I assume this upcoming breakfast is probably going to take a little time, too, so don't let us get in your hair.

13 32 09 DMP Okay, thank you.

13 35 32 DMP We now have a strawberry-colored spacecraft. Just had a juice bag break..

CC-H Spill much?

DMP Doesn't take much up here to seem like a lot.

CC-H Understand.

CC-H Just what you need to make your day, right?

DMP It'll get off to a good start.

CC-H Roger. Incidentally, your friends up there just got off their circ burn and it's all in good shape, so they're in orbit waiting for you.

DMP Oh. Superb. Great.

DMP Incidentally, it takes an awful lot to spoil your day up here, Crip.

CC-H I would imagine. Feel pretty good?

ACDR You better believe it, never felt better.

DMP There may be something better, but it's been so long since I've seen it, I couldn't really tell you.

CC-H Roger that.

13 40 35 CC-H Apollo, Houston. We'd kind of like to get a status report here about - when you might like to talk about this probe problem and consider working it. I know you're kind of busy having breakfast there; can you talk about it a few minutes now?

DMP Yeah, we can listen, Crip, if we don't have to write anything down here.

CC-H Okay, well, why don't I just talk here at first; I don't believe it's going to be necessary for you to write anything down, and maybe we can go over a little bit later and jot down some specific steps.

13 41 11 DMP Okay. Go ahead.

CC-H Okay, per Vance's description last night of the problem, we went back and did some investigation, and sure enough we turned up some closeout photos that show one of the, indeed, one of the connectors is sitting over your connection point for your tool to release the capture latches. And what Vance had suggested about getting that cover off and going in there and correcting it seems like the prudent way to go. You're going to have to go ahead and get the probe - jack it back out, though, to be able to access the area good. And there is one little nut down on the side of the pyro cover that has to be removed, and you can get - get at that with your ratchet W, and socket number 1. And it doesn't look like much of a problem to get it off. I'm sure Vance probably remembers that once - you get that nut off to release the cover, you got to squeeze it together, and it takes a pretty good squeeze to - to squeeze it, and then pull it out. But that doesn't look like much of a problem at all. We're - once we get in there, we'd kind of like to verify the colored dots with the connectors to make sure we know which one's connected to where, since we have got the problem, but we're pretty sure that - which connector it is - which was the - red one, which according to procedures, should have been the one that was fired on the - the docking. So it looks like the used one is the one that's the problem. Now, if that is the problem, that particular connector looks like it might be a little bit difficult to get in and release. And if it is, there is one right beside it, which is the yellow-dot connector that can - you got a little bit more access to, and it can be pulled off to allow you to rotate the red one back around out of the road, and then reinstall the yellow one. But - I think we can probably leave some of that to your discretion. When you get in there, take a look at it, and see how - see how much access you can get a hold of. Remind you, you've got to get the pliers, which is part of that pin straightener kit. If you think you need those to work on it. We do want - after we get it

all squared away, we would like to get it back re-installed - so that we've got a working probe just in case we do need it for something a little bit later on. However, that red connector, if it's any problem reinstalling it, does not have to be reinstalled, and - all you've got to do is - just tape it securely out of the road so that it won't interfere when we're retracting the probe. That's a brief rundown of the thing, and if you'd like to go down to specifics, we'll be happy to do so.

DMP Okay, Crip. Vance thinks he understands all that; only thing we'd like to be sure of is the right tool numbers to ...

CC-H Okay. And that's no - no big deal. It's the ratchet handle which is tool W and the socket which is number 1.

13 44 44 DMP Okay.

CC-H And all you got to do is to, basically, go through the procedure like you're extending the probe - not extending it, pardon me, let me get the words right - like you're installing the probe. Go through those procedures to get it jacked back out and to allow you to have access to it, and it shouldn't be any problem.

DMP Okay, but we didn't read that. Could you try it again? They're reading through the squawk box when I'm on headset, we get that feedback squeal.

CC-H Okay. No, all I was saying is that what he is going to have to do since we think that you left it partially removed last night, you probably - you are going to have to go through the installation procedures with the exception that you don't have to hook up any - any umbilicals, of course, to get it back where you've got access to work on it.

13 45 55 DMP Okay.

END OF TAPE

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

13 52 06 CC-H DP, Houston. Deke, when it's convenient, would you give us a readout on the battery charge current and voltage, please?

DMP 37.6.

CC-H 37.6 on the voltage - what was the amps, please?

DMP 2.1.

CC-H 2.1.

DMP Rog.

CC-H Than you very much. That allows EECOM down here to keep a pretty good idea of what your battery status is.

13 56 49 CC-H Apollo, Houston. I'm going to lose you on the ATS, here, shortly. And we'll pick you up through Guam in about 4-1/2 minutes. Little reminder, when you get a chance, that we got a P52 that's scheduled for about now, and I'll be needing to pick it up pretty soon because toward the end of this night period, you're over - rolled over, looking at the Earth, and it's not too good an attitude. Also, when somebody gets a chance, we'd like - we think the battery vent valve was closed last night and we need to get that opened, if it is. And also, if everybody's finished with their morning chores, well - the WASTE STOWAGE VENT valve can go to VENT.

14 01 30 CC-H Apollo, Houston. We are AOS through Guam for 7 minutes. We see the P52 in progress.

CMP Roger, Crip - and we're doing the P52.

CC-H Roger that, Vance.

CMP Crip, are you getting data on our P52?

CC-H We're looking at it. That's fine.

CMP Okay. Then we won't give you the report; we'll just let you watch it.

CC-H That'll be good, Vance.

CMP There's your NOUN 93's.

CC-H Okeydoke.

CMP Okay. Torque 25:43:20.

CC-H Roger.

CC-H Apollo, Houston. For the CP. As soon as you finish up with that P52, you can then get back to P00 and you can give us ACCEPT. We'll go ahead and uplink your state vectors.

14 04 28 CMP Roger. Giving you ACCEPT now.

14 05 50 CMP Houston, Apollo.

CC-H Go ahead.

CMP On this probe thing, Crip, do you want me to start working on it before we hit ATS or would you rather have us do it over ATS?

CC-H Vance, what we'd recommend is you go ahead and press into it and then if you have any problems, we can work them when we get to the ATS coverage.

CMP Sounds like a good idea.

CC-H Apollo, Houston. We're 1 minute from LOS. We have the state vectors in, so you can go back to BLOCK. Our next station contact will be through Santiago in 32 minutes at 26:19. That's 26:19. I'll be saying good morning to you and turning you over to Richard. He'll be talking to you there. We'll see you in the morning.

CMP Okay, Crip. Real good. Nice talking with you.

CC-H Roger.

14 07 34 CMP And we're going back to BLOCK.

CC-H Roger that.

14 36 12 USA Hello, Houston.

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Page 3

14 39 07 CC-H Apollo, Houston. Hello at Santiago for 4 minutes.

ACDR Hello, Dick. How do you read us?

CC-H Loud and clear, Tom. How me?

ACDR Okay. Vance is working on taking this baseplate off of the probe, and it is really going rough. The screws were - he's got the three screws busted loose, but it seems like it takes tremendous torque. And he hasn't got the baseplate off.

CMP Okay. But I just found out something new here, Crip. It doesn't look like I'll have to take the baseplate off. I'm leaving the cover on right now, and through the side, I've been able to get the pyro connector with the orange dot off. And now I'm working on the one that's in the way, which - I think I'll be able to get out - get off - without removing the pyro cover. The one that's in the way is also orange.

CC-H Okay. Stand by just 1 second, Vance. I think we've had a slight misunderstanding in communications. But let me get right back to you. Hang on.

CMP To say that another way, I guess the one - I've just removed the connector with an orange dot, which is in the way of the connector I have to get at. And that's the connector with a red dot.

CC-H Okay, Vance. I think we may have misled you a little bit. What we had wanted you, originally, to do was not remove the three Phillips-head screws at the top of the pyro cover, but down on the side of the pyro cover - down at the base there's a little flange with a little hex nut in that you need W - tool W and tool 1. And if you just remove that one hex nut and then press on the cover, the whole cover'll come off in your hand. And then you can get directly down at the connectors.

14 41 13 CMP Okay. Very good. We got the hex nut off. But - I guess I just didn't press hard enough to get it off, and I thought - -

CC-H Yeah, it - -

CMP - - cover off - -

CC-H Yeah. It - yeah, when you get it off, you'll see why. But you do have to reach down to the sides, there. Just - and squeeze real hard. And there's just two little bitty metal flanges there that're holding it on - when you do squeeze it, it should just come right off in your hand. And it may take two hands.

14 41 36 CMP Okay. It's off.

CC-H Hey, super! Good.

CMP Okay, we have the offending connectors off, too, now. And I think we're in good shape now. It's just a matter of going back through the removal procedure and taking this thing off. And we can put connectors back together once we get the probe out.

14 42 04 CC-H Okay. Just a second, Vance. We're about 45 seconds from LOS at Santiago. The high-gain angles are good, so we'll be talking to you on the ATS here in just a second. We had intended for you to - after you got the pyro cover - to go ahead, remove the offending connector, and either reinstall it so it doesn't cover the tool place or tape it out of the way, install the other connectors, then reinstall the pyro cover, and then - now, we ought to be back to nominal, and you can go through the procedures to get the probe out.

CMP Okay. The only thing that bothers me is - I'm not sure there's anyplace to put that red connector easily, so that it won't be in the way. But I'll try.

14 42 51 CC-H Okay.

14 46 32 CC-H Apollo, Houston. Talking to you through the ATS. How do you read?

CC-H Apollo, Houston. Through the satellite.

DMP Rog. Go ahead, Dick.

CC-H Just letting you know we're locked up, Deke. And I read you loud and clear. How you doing?

DMP Okay. Fine. Just starting fuel cell purge here.

CMP Okay, Dick. Another progress report.

CC-H Okay.

CMP I'm putting the cap back on. I think we're all squared away now. I could not get the red connector back on without having it interfere. So I've left it disconnected. The other three connectors are connected. It - -

CC-H You want to know where that connector is?

CMP - - looks to me like all we have to do is put the screw on to lock down this cap and we're in Fat City. The reason you can't get that connector connected without having it interfere is the fact that it's on a wire that's too short.

CC-H Aha. Well, I tell you what - just for our curiosity, why don't you describe how you got it out of the way underneath the cap and - and then, we're happy that it's out of the way and not connected.

CMP Okay. I - the pressure release button is going to be my reference point, here. I've got it almost sitting on top of the pressure release - or pressure relief button. And it's kind of cocked in there sidewise. And I don't think it's going to do us any harm. What I could do, if it would help, is just let it dangle outside of the cap. That might be better.

14 48 46 CC-H Well, we wouldn't object with that. You might just get a piece of our old friendly gray tape and tape it to the outside of the cover. It's in R-6.

CMP Okay.

CC-H Whatever looks best to you, Vance. We just wanted to - try to understand the configuration so we'd know.

CMP Okay. It'll be outside of the cover and dangling. And we'll cap it off with some gray tape - tie it down.

CC-H Okay. Super. Just - as you keep working on it, if you'd keep us advised, we'd appreciate it. Incidentally,

the biostack should be off by now. The only reason I'm reminding you is - we're having all this talk about the - and all this business about the probe, and just didn't want to miss it.

14 51 41 CC-H Apollo, Houston. Vance, you still listening?

CMP Rog. Go.

CC-H Yeah, Vance. We're sitting here looking at the probe ourselves and the only - in taping the connector out of the way, the only caution that we'd like to point out to you is - is when you do fold the probe, that connector and its wire needs to be within the - well, at any rate, the - the probe cover is going to bury itself in - down in the probe when the probe is folded, so that the connector and the wire's going to have to be sure and not be in the way there.

CMP Okay, understand. And we'll watch for that. And that's a real good idea. You guys are really on top of this. You can see just what I'm looking at.

CC-H Yeah, I got one about 6 inches in front of my face, as a matter of fact.

CMP You'll know the back end of the probe very well after this exercise.

CC-H Oh, I wouldn't say that. But we'll try.

ACDR Dick, it wouldn't be a normal flight if we didn't have our little probe problems.

CC-H You're right, there.

DMP And - for future reference, Dick - if you think your TV is like looking through rose-colored glasses from now on, it's only because you're looking through strawberry-colored.

CC-H Yeah. I heard that - I heard that comment that the - you had a strawberry-colored spacecraft. What I was wondering was, did you have a strawberry-colored DP, AC, or CP?

DMP One - only the CP.

CC-H Uh-huh. Okay.

14 53 32 DMP I'll swab this window off the best I can, and I think it's going to be all right.

CC-H Okay, Deke.

ACDR Dick, that makes two of those juice bags that have gone. Mine went yesterday, my orange drink, but I was able to catch most of it.

14 54 05 CC-H Okay, Tom. I'm not sure what we can do, except - if you'll just let us know when it happens.

ACDR You'll have a beautiful, psychedelic-colored spacecraft when we get back.

CC-H Well, good. I'll watch for it on the TV. Hey, listen. One thing that I had meant to tell you just a second ago. We're having a problem - a little problem with the water level in the waste-water tank. And one of the problems is - is that the SECONDARY EVAP - the good news is, of course, is - that it's keeping you cooler. But the bad news is - is that it sure likes eating up the water. So, if you could stand to turn the SECONDARY EVAP OFF and let us let the water level build up in the waste-water tank - right now, it's down to 20 percent - it would help us out on the consumables management.

CMP And - we have a valve in 382 that we turn on and off every time that we turn on the SECONDARY EVAPORATOR. Is it okay if we just leave that in AUTO all the time? I don't think you're afraid of any leaks down there, are you?

14 55 07 CC-H Okay, let me check.

ACDR The probe is out.

CC-H Hey, good, Tom.

ACDR Whoopee!

14 56 47 CC-H Thank you.

14 59 13 CC-H Apollo, Houston. Vance, in answering your question, the OFF position of that EVAP protects us against

sensor failure. Since, if you guys can put up with the temperatures, we are not planning on activating it and deactivating, at least very often, for the next several hours. What we'd appreciate would be just go ahead and turn it OFF and if you do it this once, it shouldn't bug us for a while.

CMP Okay.

CC-H Also, we are getting ready to go into a TV mode - TV downlink mode on the ATS that you ought to be aware of and as we change modes, we'll probably drop out comm here for just a second and we'll be getting TV so maybe we can see the strawberry-colored spacecraft.

CMP Okay.

CC-H And, Apollo, Houston. Has the probe removal allowed you to do the TV prep yet? Or is that not complete?

15 00 20 CMP That's not complete. We'll get on that.

CC-H Okay, fine. When you get it done, why don't you let us know and we'll downlink the TV then.

15 06 48 CC-H Apollo, Houston. We see the SECONDARY. You haven't had time yet to go ahead and deactivate the SECONDARY EVAP. We need to get - to go ahead and get it OFF so we can stop losing water in the waste-water tank.

CMP Okay. We're just finishing tying in the probe and drogue, and we'll drop that and get it right away.

CC-H Okay, Vance. Sorry to bug you but we're - the sooner we get it OFF, the less time we'll have to leave it OFF.

15 07 40 DMP Okay, we're going to reset, Dick, on the SECONDARY, and I assume you want the pump OFF too, right?

CC-H Stand by. No, Deke, we want to leave the pump ON because we are getting some cooling help out of the loop, but we do want to deactivate the evaporator and also down on 382 to get that valve that is hard to get to, to OFF.

DMP Okay.

15 08 51 ACDR Hello, Houston; Apollo.
CC-H Go ahead, Tom.
ACDR Yeah, Dick. We've got a question here. You know we have put the - that filter on, for launch on TV?
CC-H Yeah.
ACDR Okay, do we - and that's the only filter we've got and I guess - we could - coming along here to deactivate that? I mean, in other words, we get this TV prepped - just take the filter off and stow it. Right?
CC-H Let me check, Tom; I'll be right back to you.
CC-H Apollo, Houston. Tom, that's affirmative. The filter is to be taken off the camera and stowed in U-2 - it - for later particular setups using that particular bracket, you'll need it again, so be sure and just don't throw it away. Put it in U-2 so it can be found again.
ACDR Roger, U-2.
CC-H Okay.
15 10 42 CC-H And, Tom, I didn't say it, but the same goes for the - the polarizing filters on those little lights also. Just take them all off, stick them together, and put them in U-2.
15 10 57 ACDR All right, Dick. Sure will.

END OF TAPE

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ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

15 27 40 CC-H Apollo, Houston. Just so you don't forget us, we're still here. We've still got about 10 minutes left in the ATS pass.

ACDR Roger. We're trying to catch up here because of all the problems we had with the probe and everything. We've got all our TV's set up and they should be running and we're now going to start working towards the DM.

CC-H Okay. Real fine. We'll - go ahead and go to a down-link TV mode and get a little television and stay out of your hair. We still have about 8-1/2 minutes at this ATS pass, so I'm standing by.

15 32 49 CMP Houston, Apollo.

CC-H Go ahead, Vance.

CMP Okay. A question about the zone-forming fungi.

CC-H Okay, shoot.

CMP Of course, when we take pictures, the covers are open; the rest of the time, should the covers be closed or open? Just in between pictures.

CC-H Okay. Stand by a second; I'll get you an answer, Vance.

CMP Right.

CC-H Vance, we'd like the covers closed in between the picture-taking sessions.

CMP Okay. That's what we thought, thank you.

CC-H Okay.

15 34 38 CC-H Apollo, Houston. We're 2 minutes from LOS of the satellite; I'll be giving you a call down at Orroral Valley at 27:24, and we'll check your status in the checklist then. So we'll see you then.

CMP Roger. Understand.

CC-H Incidentally, Vance. We have been downlinking TV, and we've got a picture from both TV stations; it looks like the one that's pointed at the main display console may be a hair out of focus, but other than that, good pictures.

CMP Okay. We'll check it; see if you can get a better focus.

15 35 11 CC-H Okay. No problem.

15 46 38 CC-H Apollo, Houston. Short pass at Orroral Valley for about 3 minutes. How do you read?

CMP Loud and clear, Crip (sic).

CC-H Roger, Vance. How y'all doing?

CMP I estimate we are about 20 minutes behind the time line. Deke is just - getting ready to go into the DM.

CC-H Okay. Super.

CMP We just opened hatch 2.

CC-H Okay. Thank you.

CC-H Apollo, Houston. We are about 1 minute from LOS. We're going to have a short Santiago pass at 27:53; then we'll see you on the satellite. The high-gain angles in the checklist are good.

CMP Okay. Very good, Dick.

15 48 48 CC-H Okay, Vance. See you later.

16 13 08 CC-H Apollo, Houston. Santiago.

ACDR Roger. Go ahead.

CC-H Roger, Tom. I was just calling you to let you know that we are here and to check on where you were in the checklist.

ACDR Okay. We are activating the docking module.

CMP Page 1-4.

ACDR We're about 30 minutes behind.

CC-H Okay. When somebody gets a chance, you might pass down to me the time that the UVA lamp was turned on; that should probably be recorded on - in the Flight Plan. It was back on page 1-3.

ACDR Yeah. It was turned on at about 27 ... we have it recorded. Just log that, Vance, on the other page and give it to them there.

CMP Okay.

DMP 27:51:25.

CC-H Apollo, Houston. Say again, please.

DMP 27:51:25.

CC-H Okay, Deke. Thank you very much. We are about 30 seconds from LOS. We will see you when you get locked up on the ATS. We thought of one thing that will - probably would hasten the waste water tank filling up again, and that is, on panel 352, if anybody is left in the command module to close the potable water inlet valve. This will make sure that whatever water we do make goes into the waste tank.

DMP Okay. I'll do that in a minute.

CC-H Okay. No problem.

16 21 31 CC-H Apollo, Houston through the satellite. How do you read?

ACDR Read you loud and clear, Dick.

CC-H Roger. Me, too, Tom.

ACDR Okay. One thing that is a problem here - is the fact we got to do everything in series, the thing is so cramped.

CC-H Just from the - all the gear that's around, huh?

ACDR That's right, yeah. And when you put the UVA cable in, you can't do the fish experiment because once you

get behind in the time line - we're working it out, but things are just going slow because it's so damned crowded.

16 22 05 CC-H Roger. Understand.

16 23 51 CC-H Apollo, Houston. I need to know where you are in the checklist so we can plan this ATS pass. As you know, there's several things that had planned to be going on here, including the TV checkout and then, after that, the docking system checkout. Why don't you let me know where - where we are and - we can plan accordingly.

CMP Okay, Dick. Page 1-4, on the right side, and Deke is setting up the DAC right now.

CC-H Okay. Understand. And when you get into the next step on the TV installation and checkout - after that's set up, why don't you let us know, and we can - we'll get that out of the way.

CMP Fine.

CC-H Incidentally, we are coordinated with the Moscow Control Center to do a voice check when we get up to Eupatoria; that's about another 16 or 17 minutes from now. So when we get up there, we'll probably stop what we're doing and do that real fast, and we're going to do a voice check - first, from me here in Houston, and then from Overmyer in Moscow.

CMP Very good.

16 25 03 CC-H Okay.

16 36 08 ACDR Houston, how do you read through ATS?

CC-H Loud and clear, Tom. How me?

ACDR A-okay. Good shape, Dick. We're just slowly getting caught up on things here.

CC-H Okay. Where are you in your stuff, Tom?

ACDR Okay. On the Flight Plan, I've just transferred the life vests from F-1 to U-2. They're setting up - they

finished a DAC 02 setup and the TV installation and checkout from the Flight Plan at about 28 hours there. We haven't got to the docking system checkout at all yet.

CC-H Okay, when you get to a point that you're ready to start the docking system checkout, let us know and we'll go back to DATA. And I understand that the guys are into the TV installation and checkout in the docking module. Maybe we can get on with the - looking at the color charts on the various cameras.

ACDR Yeah. They're not quite ready yet.

CC-H Okay. Fine. We're standing by and when they - when they are ready, just let us know and we'll start.

16 37 26 ACDR Roger.

16 38 38 CC-H Apollo, Houston. For your information, since we can go ahead and get some command module television, we're going to go ahead and go to a TV downlink mode and look at the command module TV. When we get set up in the DM, we'll switch over into there and do that work; so we'll be dropping out here for about 30 seconds, and then I'll call you back.

ACDR All right.

ACDR Houston, Apollo.

CC-H Go ahead, Tom.

ACDR Okay. One thing in this docking system checkout. I've been going through the procedures but - you know, extending the guide ring and all that, but the whole thing - they've got Deke doing the TV activation and checkout up there and he's the one that calibrates the thing and uses the camera. Little bit of a goof on the Flight Plan, I think.

16 40 50 CC-H Okay. Stand by just a second.

16 42 31 ACDR Okay. Dick, I can read you about 4 by 4. Understand you're transmitting through Eupatoria.

ACDR I can just barely read you - read you at all. Over.

ACDR Okay.

ACDR Houston, I can hear some just - wavy noise in the background.

ACDR Bob, read you about 3 by 3 with a little echo, but once we got the probe problem squared away, we're doing okay. Just behind in the time line, and we'll be catching up. Over.

ACDR Roger, Bob. Thanks so much. Tell everybody there hello, and we're pressing right on.

16 44 28 ACDR Roger. Thank you.

CC-H Apollo, Houston. I'm calling you back through the satellite now. How do you read?

ACDR Loud and clear, Dick. And I read Bob about 3 by 3; I could understand him.

CC-H Okay. We're going to have to take a look at exactly what - what the configurations were there. I was copying you down on air-to-ground - well, on - I believe through S-band through the satellite; but I was transmitting through Moscow. But we'll check it out; we may have to do another voice check at a later time.

ACDR Roger, Dick.

CMP Okay, Houston; Apollo. Do you see the color chart on the TV now?

CC-H Okay. Stand by just a second, and let us switch cameras, and we'll look at it.

16 46 16 CC-H That's affirm. We do have the picture here, and let us take a look at the colors.

DMP Soon as you get through with that side, let me know. I've got a readability test for you on the other side.

CC-H Okay, Deke. We'll let you know. We want to look at it for at least 30 seconds and - and - so stand by.

DMP Okay. Go ahead, Tom.

CC-H Deke, Houston. We're satisfied with this view now.
Do you have the other TV camera on yet?

DMP Negative. We haven't got to there yet per checklist.

CC-H Okay, fine. When you get it on, we'll take a look
at the - at the color chart from that camera.

DMP Can you read our readability sign?

CC-H Well, I'm trying to read it; hang on a second.

DMP Maybe I've got it upside down for you. Which direc-
tion should I turn it?

CC-H Bring it in a little closer to the camera if you can.

CC-H (Wally Schirra ...)

DMP Looks readable on our monitor anyway. Let one of
your Russian friends read it.

16 48 20 CC-H Okay. We'll have to get one of those.

END OF TAPE

Day 197

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

16 51 27 ACDR ...

ACDR Houston, Apollo.

CC-H Go ahead, Tom.

ACDR Hey, how about doing me a favor, Dick. Check with the flight planners and the stowers and find out where the bracket is that we mount the 300-millimeter Nikon lens out the right window.

CC-H Okay. Sure will do it.

16 53 39 CC-H Tom, Houston. It's in A-5, Alfa 5.

ACDR Okay. Thank you.

CC-H Okay.

16 57 33 ACDR Houston, Apollo.

CC-H Go ahead, Tom.

ACDR Yeah, looking back on the Flight Plan here at 28:10, it says, "Deactivate primary evaporator." Do we really want to do that as hot as this bear's running?

CC-H Stand by.

16 58 05 CC-H Tom, that deactivation of the primary evaporator is to support the UVA COAS cal that's listed in the Flight Plan, at the start of the next night cycle at 28:30. So, if you don't think that we're going to be able to get the COAS cal because we're running a little behind, we can leave the primary evaporator running and we'll pick up the COAS cal at the - hopefully, at the next dark-side pass. We will have - -

ACDR Yeah. There's no - there's no way we can get that. It'll have to be the next one, and we'll have to work all during eating period to catch up, here.

CC-H Roger. Understand. And, we - so leave it running and - but the - the direct answer to your question is, yes, it will have to be deactivated a few minutes prior to whenever it is we run the COAS cal.

ACDR Okay. And, look ahead when we get ATS coverage in daylight where you want to use that docking - instead of the docking system, I would estimate it would be over at about 29:35 or from there on. About 29:30 - 35.

CC-H Okay. We'll take a look and - probably at the tail end of this ATS pass if you guys will give us a good idea as to where you are, we can - we'll try to help you out on the Flight Plan.

16 59 37 CMP Houston, we now have the second TV camera hooked up in the DM if you'd like to look.

CC-H Roger. We are looking at it, Vance. It looks like the gray tape has unsticked itself. You might put the color chart back, and we'll look at it.

CMP Right.

17 00 23 CC-H Okay. We're looking at the view, guys. There is some shadow on the - and the cables are a little bit in the way, so let us just look at it here for a second and I'll get right back to you.

CMP Okay.

CC-H Okay. That's got everything out of the way of the color chart now, so if you can, stand by with all that spaghetti for a second and I'll get back to you.

CMP Right.

17 01 02 CC-H Okay. We're satisfied with looking at the color bar chart. Thank you much. You can press on with the checklist. Thanks, Deke.

DMP Okay. Roger.

CC-H Looks like y'all took some snakes with you, in addition to the mosquito.

DMP Yeah, you're right. We've got a real ranch up here.

CC-H Roger.

CMP We need a couple of crocodiles to go with them.

CC-H (Laughter) Roger.

17 07 32 CC-H Apollo, Houston for Deke or Vance - one of you guys in the DM.

DMP Go ahead.

CC-H Hey, listen. We think we might make a little money here by skipping step 12 and delaying the multipurpose furnace preparation and going ahead and doing step 13, which is the DAC/TV vibration test since we are - are locked up on television when we have about another 7 minutes left on the ATS. So, we'd suggest that you do step 13 and then - and then go back to step 12, if that's okay with you.

CMP Okay, fine. We'll jump into it.

17 08 09 CC-H Okay, fine. If you'll hustle, maybe we can just get it out of the way before we have LOS, and then you can go back and do the other one. Thank you.

17 10 45 DMP Hey, you guys ready down there, Dick?

CC-H Stand by just a second, Deke.

CMP Okay. Do you want us to turn the DAC on? We - we'll turn it on now, and we can turn it off if you want us to later.

CC-H Okay. Go ahead and turn it on and we're looking at the TV and we'll watch. Go ahead.

17 11 27 DMP Okay. It seems to be running.

CC-H Okay. Hang on just a second.

DMP And the old reading tester.

CC-H We guessed what it probably says, but - we still haven't seen it. Can you tilt the page a little bit away from you, Deke? In other words, tilt - the other way - the other way. No, it's got too much glare on it.

17 12 04 CC-H Deke, Houston. We're satisfied with the vibration test. For your information, we've got practically no vibration with the DAC running, so you can press on with the procedure and - we have some good guesses as to what that says, but we just can't read it because of that glare on the white page.

DMP Okay. And I'm glad you passed our reading test.

CMP Something about (turtle).

DMP It says (Are you a turtle?) That's a big question.

CC-H Okay. That's what we thought. We'll pass it on.

17 12 47 CC-H Apollo, Houston. We're just 2 minutes from ATS LOS. We're just going to drop out a couple of minutes. I'll call you at Orroral Valley.

DMP Okay.

ACDR Roger, Dick. We'll pick you up at Australia.

17 13 03 CC-H Okay. See you there.

17 16 46 CC-H Apollo, Houston through Orroral Valley for 6 minutes.

17 17 08 CC-H Apollo, Houston through Orroral Valley. We dropped out there for a second. I'm back up and standing by.

ACDR Okay, Dick.

17 21 00 CC-H Apollo, Houston. We're 1 minute from LOS. We'll give you a call at Quito at 29:27. See you there.

17 48 45 CC-H Apollo, Houston through Quito for 4 minutes.

ACDR Okay, Dick. We're still finishing up the DM activation, getting into the multipurpose furnace okay. We need to have a couple of decisions on the Flight Plan. Are we going to do that UVA obs or are

we going to extend the docking mechanism, or are we going to do the U - the cal on the UVA ... on that? Over.

CC-H Okay. That's - Tom, that's what we've been talking about during LOS and I guess to make an intelligent decision, we need to know exactly how far you guys have gotten in the docking - into the docking module checkout.

ACDR Okay, Dick. I'm about through here, actually. I've got to take the readings yet and close down. It should be in less than 5 minutes.

CC-H Okay. Fine. When you get the readings, I'll be standing by to get them, and, Tom, let me get right back to you. Okay?

ACDR Roger.

17 51 12 ACDR Houston, Apollo.

CC-H Apollo, Houston. Go ahead.

ACDR Okay, Dick. We haven't even thought about eating yet. We could skip that and work it - try to work it in later.

CC-H Well, we don't plan on you skipping it. We've - we are trying to juggle things for the afternoon and seeing how we can - how we can catch up. And we're talking about, now, what we want you to - how - how we want you to plan this next hour or so.

ACDR Okay.

17 52 11 CMP Houston, Apollo.

CC-H Apollo, Houston. We're about 30 seconds from LOS here at Quito. I'll see you when you get locked up on the ATS. Tom, what we'd suggest is - is during this - is that we do the docking system check - checkout in the Joint Ops Checklist after we get locked up on the ATS and also during this upcoming night period that we try to get this UVA COAS cal in and then break for lunch.

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ACDR Sounds good.

17 52 42 CC-H And we'll be looking at this afternoon's schedule for the rest.

17 57 26 CC-H Apollo, Houston through Bermuda. How do you read?

ACDR Loud and clear.

CC-H Okay, Tom. We were close to LOS there. Let me just review what it is we are going to be doing in the next few minutes if - and then we'll get on with it. First of all, we would - when we get locked up good on the ATS, we'd like in the joint systems checklist starting on page 1-1 to go through the docking system checkout. After we get through with that, we plan on doing the UVA COAS cal and at that point, we'll just break and let you guys get a bite to eat. Also, when we come over the Russian site again, we plan to do a real quick voice check - once more.

ACDR Okay.

CC-H And in order to be set up for the UVA COAS cal, we'd like to go ahead and deactivate the primary evaporator.

17 58 27 ACDR In work.

CC-H Okay. Real fine.

CC-H Apollo, Houston. One comment on the docking system checkout - I don't think there is any confusion in your mind but just to make sure. There is a couple of places in the procedure that **it refers to** - a couple of notes where it says if we are checking system Bravo; for this checkout today, we are going to check out system Alfa only, so just ignore those notes. We will not be checking out system Bravo.

CMP I understand.

18 00 46 CC-H Apollo, Houston. We've - EECOM noticed that the EVAP OUT temperature is gone real low. You might check again through the procedure on deactivating the primary evaporator - make sure that the valves all went in the right direction.

ACDR Okay.

ACDR Yeah, we've locked up. Houston, are you ready for us to activate the circuit breakers?

18 02 24 CC-H Tom, yes. What I was just getting ready to call you was we've got data on the ATS. We want you to go ahead and start through the procedure, and when you - are you through with step 2? If not, when you get through with step 2, let us know and we'll proceed from there.

CMP We're finished with step 2; ready to proceed.

CC-H Okay. Proceed, go ahead. And let us know what you are doing, please.

18 02 54 CMP Okay. Starting step 3 now.

CC-H Okay.

18 03 53 CMP Okay. We have step 3 completed, and Deke says he's completed 4.

CC-H Okay. Stand by a second.

DMP Yeah. And hey, Dick, for your information, the only line I can see is lines 5 and 6. For some reason, the rest of them are all blocked.

CC-H I understand you can see - -

DMP And we're doing it the first - -

CC-H Okay. You can see lines 5 and 6 only?

18 04 22 DMP That's affirmative. I can see a little bit of 4 but 3, 2, and 1 - the ones we usually use for this - none on them are visible. They are all blocked out by some shrouds.

CC-H Roger; copy.

DMP Anyway, it ought to be accurate enough.

CC-H I'm sorry, Apollo. Say again.

DMP Yeah, I think our ... good enough accuracy, I would think, with line 5.

CC-H Roger. Stand by.

18 05 28 ACDR Houston, we're still standing by.

CC-H Roger, Tom. We were talking. Let me get back to you right now. Back on step 3, I probably misled you there. On step 3, we would like to close all the breakers for systems A and B but later in the procedure, when it says actually activating system B, we will not do that. So go back to step 3 and close all the breakers for both systems and also - then we'll be ready to proceed. We do want to terminate the bat Alfa charge, though, before proceeding further in the - with the motors in the procedure. For your information, it's in the Systems Checklist, page 1-6.

DMP Okay.

CC-H And so, let me know when the circuit breaker is IN and the bat - charge is terminated, and we'll press on.

18 06 26 DMP Okay, all 12 circuit breakers are IN.

CC-H Okay.

18 07 01 DMP Okay. The charge is terminated and the BAT RELAY BUS breaker is IN.

CC-H Okay. Super. Press on and start - starting with step 7.

18 07 10 CMP Okay. Starting guide ring extend.

CC-H Okay. We're watching it on the data.

18 07 26 CMP Our PASSIVE light went out.

CC-H Okay.

18 07 53 CMP Okay. We have a GUIDE RING EXTEND light.

CC-H Okay. We see it here on the ground, too, Vance, so you can just continue right on through.

CMP And Deke's working the camera part of 7 now.

CC-H Okay. And just let us know when you - as you continue through, Vance.

CMP Roger.

18 09 07 DMP Okay, Dick. On the camera, I get a 16 foot 11-1/2 inches prior to extension, and I now have 17 10-3/4 on the first reading, 17 11 on the second.

CC-H Okay, Deke. Copy.

CC-H Apollo, Houston. That extension looks good to us, so go ahead and continue.

DMP Roger.

18 10 28 CMP Okay. Starting guide ring retract.

CC-H Okay.

18 11 13 CMP Okay. We have a PASSIVE light on.

CC-H Okay. Same here.

18 11 22 CMP Going to step 8.

CC-H Okay. We're right with you, Vance. Go ahead.

CC-H Okay, Vance, you can go ahead through steps 8 and 9. We're - we think that was a good test and - and we can go ahead and get set up to do the COAS cal procedure that's in - back in the back of the book there.

CMP Okay. Understand. Glad it's a good test, huh?

CC-H That's right. It looked real good. And the next procedure is on page 10-5. Stand by and I'll be right back to you.

18 13 11 CC-H Apollo, Houston. We'd like to go ahead and do this comm check again that's coming right up here over the Russian site. In order to do it, there are two - there is one circuit breaker and a switch that needs to be thrown. The circuit breaker - and they're listed - I'll tell you what, they're listed in the Flight Plan at 28 hours and 20 minutes. The circuit breaker's on panel 815 and the switch is on - on the audio panel of whoever's going to do the comm check is just VHF, FM to T/R.

ACDR Dick, what time do you want to do this FM check?

18 14 09 CC-H We're coming AOS at Eupatoria right now, so if you can throw those two switches - if it's convenient now, we can do it now. If it's not, we can catch it another rev.

ACDR Okay.

CMP Deke's on his way up right now.

CC-H Okay. Super. Let me know when - when you're configured, and we'll go ahead and do the check.

ACDR Okay.

CC-H And also, at your convenience, we'd like to get the bat Alfa charge going again, since we've done the docking system check - check.

ACDR Okay.

18 15 51 DMP And, Houston, your bat charge is started on A.

18 15 54 ACDR Okay, Houston. We have the FM CLOSED. We're ready to do the comm check.

CC-H Okay. Stand by just a second. Let me give you a call on the right loop. Hang on.

ACDR Roger, Dick. Read you loud and clear through there.

18 16 22 ACDR All righty. You're coming through very - you're coming through as good as VHF or S-band.

ACDR Roger. Read you loud and clear. I'll give you one: 1, 2, 3, 4, 5. Over.

ACDR Roger.

18 17 00 ACDR And, Dick, after we complete this comm check, do you want that circuit breaker OPEN?

ACDR Roger, Bob. Roger. Read you loud and clear. How me?

ACDR (I hear you excellently.)

ACDR (...)

ACDR All right. Thank you, now.

ACDR Okay, Dick. We had a good comm check with Bob.

CC-H Okay, Tom. I'm back on S-band now. I concur. And we want you to leave the circuit breaker on panel 815 CLOSED.

DMP Okay. Hey, Dick, while I'm here, you want those systems voltmeter readings?

CC-H Yeah, go ahead.

18 18 17 DMP Okay. System A, number 1 latch, 1.05; number 3 is 1.2; number 5 is 1.8; number 7 is 0.85. On system B, number 2 is 1.5; 4 is 0.8; 6 is 1.0; and 8 is 1.2.

CC-H Okay, Deke. Copy. Thank you much.

DMP And the question on the furnace, I think you got our call that the shroud door will not lock shut. It's open about an inch or 2.

CC-H Which shroud door - -

DMP In checking it, we - -

CC-H Which shroud door was that, Deke? I'm sorry - I don't understand.

DMP That's on the furnace - -

CC-H Oh, okay.

DMP - - on the multipurpose furnace.

CC-H Okay.

18 19 19 CC-H And stand by just a second, please.

END OF TAPE

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ASTP-AIR-TO-GROUND VOICE TRANSCRIPTION

18 20 26 CC-H Apollo, Houston. What we'd like to do now is go ahead on page 10-5 and start the COAS cal procedure.

ACDR Stand by.

CC-H Okay.

18 21 38 ACDR Okay. Houston, Apollo.

CC-H Go ahead, Tom.

ACDR You want me on - on 10-5 in the UV absorption - do you want to go ahead and do a VERB 49 and maneuver to that - to 225, 145, and 1 - and 348?

CC-H Roger. We think that's where you are now, Tom.

18 28 15 CC-H Apollo, Houston.

CMP Go ahead.

CC-H Hey, Vance, I assume that y'all are pressing through the COAS cal procedure. It looks like in the - getting back to the primary evaporator, we think we may have dried - dried out the evaporator. We need - if someone is free, we can start this procedure now; if not, as soon as the COAS cal is done. What we'd like is to make sure that the back pressure valve is closed and then do a primary evaporator reservice procedure, which is on page 1-18 of the Systems Checklist, with the exception of: delete the last step in the procedure.

18 29 01 CMP Okay; understand. Make sure the door's closed and do the evap reservicing procedure except for the last step.

CC-H Yes. There won't be a problem with the doors. You're right about the doors being closed, but there shouldn't be a problem because there's a 15-minute waiting period in this reservicing procedure. And we should be through with the cal by that time.

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CMP Okay. And we're right - the cal's going pretty well. Deke's defining the limits right now.

CC-H Okay. When you get to the - to the end of the cal procedure, give me a holler, okay?

18 29 36 CMP Roger.

18 36 41 CC-H Apollo, Houston.

CMP Go ahead, Houston.

CC-H Vance, we're talking about this afternoon's activities and what can be pushed around or skipped without much impact to the mission, if need be. I'm assuming all three of you guys removed your OBS harness last evening. Is that a fact?

CMP Correct.

CC-H Okay. How's the cal coming?

CMP We're just finishing it up. We're on the last step, 7; cleaning everything up. And I think it was a good cal. Deke - Stand by.

18 37 32 CMP Deke points out that 3-1/2 - 3 degrees to the right and 2-1/2 degrees to the left of the center of the COAS, he was still getting a good signal, which is a little strange since the limits aren't supposed to be that wide.

CC-H Okay. Copy. Vance, while I'm - while I'm talking to you about this, after you get through with the COAS cal procedure, if you'll look on the Flight Plan at - it's listed in there at 29 plus 55. There's a series of about four steps there that'll shut down the UVA lamps and power and so forth. It's called - I think it's probably also in that procedure, but we want you to be sure and do those steps when you're through.

CMP Okay. Understand.

CC-H Okay; I'm sorry. They're - they're not in a procedure, but since - where the Flight Plan's a little bit off, just when you get through with the cal, just do those steps there. And let us know.

CMP Okay. Say the time again.

CC-H 29 plus 55.

CMP 29; okay, thank you.

18 38 44 CC-H Okay.

18 47 34 CC-H Apollo, Houston.

CMP Go ahead.

CC-H Roger. We're about 2 minutes to LOS, and we will not be seeing you again until you get up toward stateside. What - as far as the Flight Plan goes, here's what we'd recommend that you do. First of all, go ahead if you haven't already started and get a bite to eat. And - there's - it is not clear whether or not we're going to have to do this maneuver this afternoon, so we can't be sure about the rest of the Flight Plan. But what we'd suggest is, delete the mapping pass, remain in your present attitude. I've got high-gain angles for you. Don't worry about the SIM bay activation. We will probably be able to pick it up later on this afternoon.

18 48 26 DMP Yeah, well, of course, the next thing the two of us have got is donning the OBS and the exercise, which we haven't started either one of them, obviously. Are you saying you want us to continue with that?

CC-H Negative. What we'd like you to do is, for right now, forget the OBS and exercise. We - it may very well be - delete them, and just go ahead and get a bite to eat, and we'll be squared away when we get AOS as to what to do. We'll know a little more about the maneuver at the time.

DMP Okay.

CC-H Okay. Let me give you some high-gain angles, please. The pitch is minus 39 - 39; yaw, 121 degrees. And those are good for you - -

DMP Pitch is minus 3 - -

CC-H I'm sorry, Deke; go ahead.

DMP Minus 39 and 121.

CC-H That's right, and that's for your present attitude. And we'll see you at MILA at 31:04.

CMP Okay, I take it you don't want me to do the SM experiment activation unless ... coverage.

CC-H That's affirmative. We want to go ahead and get you - just let you guys get squared away and get a bite to eat.

CMP Okay.

18 49 40 CC-H We'll probably pick it up later, Vance.

19 26 43 CC-H Apollo, Houston through MILA. How do you read?

DMP Yeah, go ahead, Bo.

CC-H This is Richard here, Deke. Let me - I assume that you guys are in an eat period. If you can - one thing, we wanted to know what you were doing, naturally. And another thing, I wanted to talk to you about the upcoming burn and our choices on the trajectory. Over.

DMP I think we're right over the Cape.

CC-H You're right. You're passing right over the launch site just about now.

DMP Yeah, we can see it. We're in a good attitude here for Earth obs. Okay, in answer to your question, we're just sort of wrapping up lunch for probably another 10 minutes or so.

CC-H Okay. Let me tell you our thoughts on the trajectory and the burn this afternoon and what we propose for the Flight Plan if you can listen. Over.

DMP Okay. Go ahead.

19 27 49 CC-H Okay. We have a very small out-of-plane component in the trajectories. It's in the neighborhood of 7 feet per second. However, it - the node is placed in such a way that if we don't get it out, it will affect the NC2 and NSR burns tomorrow. Essentially, the

gimbal angle would be about 40 or 45 degrees, something like that. And it'll about double the size of the two burns. This is - we got plenty of gas and so this is - be no problem, but one other consideration is - is that the trajectories ... - the perigee caused by the NC2 burn, if the tracking data went the wrong way during the evening, could conceivably give us an NC2 burn that we couldn't execute because of the perigee. So we're essentially faced with the choice of doing the PCM burn this afternoon, the whole thing, and getting the rendezvous squared away per nominal for tomorrow or doing a small retrograde burn and try to catch up on some of the Flight Plan items. I think what we're leaning towards right now is to go ahead and do the - do the burn this afternoon, which is going to come up here in just a short while, and then essentially for the time being, forget those items that are listed in the Flight Plan until we tell you different, that occurred prior to this time of day. This way we'll be set up perfectly for the rendezvous tomorrow, and then you can jump right back into the printed Flight Plan for the rest of the afternoon with what minor changes we might have to make. Over.

19 29 32 DMP That sounds like a brilliant idea. We're all for that.

19 29 35 CC-H Okay. Assuming that's what we're going to do, we want to get one thing done and that is, at about 30 hours and 40 minutes in the time line under the AC column, it says, "Go BMAG POWER 1 to WARMUP and verify FDAI scale in 5/1." We don't know whether you have done that or not, but if you haven't, please do it now.

19 29 57 ACDR I've already got it on time. That was done on time.

CC-H Okay. Good, Tom. One other comment; we'd like to continue with the bat Alfa charge until we let you know, and we'll delay the bat Bravo charge until later on today.

ACDR Okay.

ACDR Could you give us a ballpark idea of when we're going to plan - the plane change? Over.

CC-H Okay, Tom. I think it's going to be almost the nominal time, but let me see if we have a T_{ig} yet.
Hang on.

ACDR All right.

19 31 34 CC-H Tom, excuse me, I was wrong. The T_{ig} time is going to be very close to 32 hours, and that's about 50 minutes from now. And FIDO's hustling to get you a pad at this moment.

ACDR Okay.

CC-H Okay.

ACDR Okay. And, Dick, I was off the headset eating there. We're going to take this mostly out in - with respect to out-of-plane?

CC-H That's affirm. We're going to do it. Right. We're going to get you a pad that's going to take care of the out-of-plane this afternoon, and it'll set up the rendezvous for tomorrow.

ACDR Right. I - I understood the last part of that, but it looks like we'll be getting a P38 then. Over.

19 32 23 CC-H Oh. Tom, I'm sorry. I should have gotten to you. It's going to - it's - it's not going to be a P38. It's probably just going to be an RCS burn.

ACDR Oh, okay. ... we're going to use the big engine for a big delta-V. I didn't know the magnitude of it. Over.

CC-H Oh, no. Yeah, I guess - I guess you didn't hear me. The magnitude is very small. It's really - the magnitude of it we really could easily hide in the burns tomorrow but two or three other considerations just make us think that that is not the smart thing to do. We'd like to just go ahead and get it out.

ACDR Roger. Understand.

19 32 57 CC-H Okay.

19 34 05 CC-H Apollo, Houston. We're about to go LOS from MILA. When you get locked up on the ATS right here, we'll pick you back up.

ACDR Understand.

19 42 18 CC-H Apollo, Houston through Madrid.

ACDR Loud and clear.

CC-H Roger, Tom. Have you been trying to lock up the ATS?

ACDR Roger.

CC-H Okay. Let us recheck the angles again here. We want to get you locked up and switch over to ATS so we can get you a good pad in a little bit. Hang on.

ACDR Okay.

ACDR Go ahead with your angles.

CC-H Apollo, Houston. Say again.

ACDR Roger. What do you have for your angles there?

CC-H We're rechecking them right now. Hang on just a second, please.

19 43 21 CC-H Tom, Houston. The - the correct angles are pitch of minus 7; yaw of 313. Why don't you try those real quick, and - and let's see if we can get locked up on ATS.

ACDR Okay, we got - should have ATS now.

19 44 01 CC-H Okay. I'm reading you loud and clear. That's real good. And stand by 1 on the pad. Hang on.

19 44 46 CC-H Apollo, Houston. I've got a preliminary PCM pad for you when you are ready to copy.

ACDR Okay. Stand by 1 second.

CC-H Okay, Tom. It's - it's in the Flight Plan, page 4.1-16 Bravo.

ACDR And I'm ready to copy.

CC-H Okay. Starting with NOUN 30 - 33. 031:58 four balls; minus 002.2, minus 006.3, minus 006.0; 293, 057, 313;

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009.0; 00:24. Weight, 32361; and, of course, the trims are - are not applicable. It'll be a four-jet plus-X RCS burn. And here's the - what the DAP needs to be: 61102. Go ahead.

19 47 13 CC-H And, Tom, Houston. We are processing data from the last good tracking pass we had over MILA. It was a real high pass, so I may have another final pad for you here in about 5 minutes. And I'm standing by to copy. Readback any time you have a chance.

19 48 13 CC-H Apollo, Houston. How do you read?

19 48 45 CC-H Apollo, Houston. How do you read?

ACDR Houston, Apollo. How do you read now?

CC-H Roger, Tom. I read you loud and clear now. How me?

ACDR Okay. Loud and clear. Our - I'll go over them - I'll read them again to you if you're ready to copy it.

CC-H Okay. I don't know what happened there. I called you a couple of times, but I didn't hear you coming down. But I am ready to copy. Go ahead.

ACDR Okay. 031:58 all balls; minus 002.2, minus 006.3, minus 006.0; 293, 057, 313; 009.0; 00:24. Weight, 32361. NA for the pitch and the yaw trim, four-jet plus-X RSC. The DAP load is 61102.

CC-H Roger. That's a good readback, Tom. I don't know if you copied or not, but we probably will have a final pad here in just a minute, based on process of data from MILA.

19 49 48 ACDR Roger. I understand.

END OF TAPE

Day 197

TAG Tape 197-12/T-16
Time: 197:19:50 to 197:21:20
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

19 50 03 ACDR Yeah, we could see pad A and B real clear as we passed over.

CC-H Yeah, it sounded like that from what Deke said. Apollo, Houston. It turns out the preliminary PCM pad that you read back is GO for the final pad, and there is no requirement for - for you to do the PC - excuse me, the P52 prior to the burn, and we see that the DAP is loaded okay.

ACDR All right. Real good. Thank you.

CC-H Okay. And we're standing by.

ACDR Roger. No P52 required and we'll do a four-jet ullage on it - four-jet burn.

CC-H Roger. That's correct.

ACDR And Houston, to keep comm as long as you can, when do you want us to maneuver to the burn attitude?

CC-H Okay, Tom. Hang on and let us check the angles and I'll get back to you.

19 52 52 CC-H Apollo, Houston. Tom, it's okay with us, so you can maneuver whenever you'd like to - just to give you plenty of time, it does look like we probably will lose the high gain shortly before you get to the burn attitude, so why don't you just let us know when you are starting the maneuver. Be advised you probably will see a high gimbal angle when you do the maneuver, but that shouldn't be any problem, as long as you're aware of it. I wanted to point out one thing before I lose you, though, about the Flight Plan, and that is the mapping - the Earth resources mapping pad that we were forced to miss awhile ago - that camera setup in the window was intended to be used or - we were going to leave the camera setup in the window and so sometime if you have a free moment before the next mapping pass, which for sure we don't want to miss, you might want to start that camera setup a little bit early. Over.

19 53 46 ACDR Yeah, the camera setup is right - it's going on right now.

CC-H Okay. You're ahead of us. Thanks a lot and just let us know when you start maneuvering, Tom.

ACDR All righty.

19 54 04 ACDR Okay. We're going in and take the maneuver right now.

CC-H Okay, Tom. See you later. The - the next AOS after the burn will be Vanguard at 32:14.

ACDR Roger.

19 55 50 CC-H Apollo, Houston. I think I was confused a little bit about the high-gain angles awhile ago. The situation is that we probably will keep comm for a while in the burn attitude, but towards the end of the ATS pass, we will lose comm, so will not be able to watch you burn. In the event we lose high gain while you are maneuvering, I do have a set of pitch and yaw high-gain angles. When you get to that attitude, you might - could reacquire.

ACDR All right, go ahead.

CC-H Okay. Pitch of minus 35, yaw of 094.

ACDR Roger. Pitch of minus 35, yaw of 094.

19 56 32 CC-H Okay. Real fine. See you later.

20 09 45 CC-H Apollo, Houston through the satellite.

20 11 20 CC-H Apollo, Houston. How do you read?

20 14 16 CC-H Apollo, Houston. How do you read?

20 15 13 CC-H Apollo, Houston. How do you read?

20 15 25 CC-H Apollo, Houston in the blind. Tom, if you are reading me, we notice that the BMAG POWER 1 is not ON, and because we're looking at low bit rate, we're not - we're unable to look at the RCS jets, but they should all be enabled also.

20 34 31 ACDR Hello, Houston; Apollo.

CC-H Roger, Tom; go ahead.

ACDR All righty. Couldn't get you on DATA REACQUIRE; went on to comm attitude and the burn went right on time. Everything was good. The residuals were zero, plus 10, and delta-V_C - -

CC-H Okay.

ACDR And delta-V_C ...

CC-H I'm sorry. I didn't copy delta-V_C. Say again, please.

ACDR ...

CC-H Okay. Sounds real good, Tom. We're - if you'll stand by here for a second, we're talking about the rest of this afternoon's Flight Plan, and I'll get right back to you.

ACDR Okay. We're trying to leap in and try and get ahead of the game and we're - I've already finished my leg volume measurements and Vance is working on Deke, and I'm going to get going on the electrophoresis.

MCC-H Okay. Press on with the leg volume measurements. Let's go ahead and do that.

CC-H Okay. We do want you to press on with the leg volume measurements. We may have some changes after that, and we're talking about it now, and I'll get back with our recommendation here as soon as I know it, Tom.

ACDR Okay. You want me to plan to go ahead with that electrophoresis prep then on time? Because if we do some maneuvers, that changes that.

CC-H I can't answer it right now, but I think I'll have an answer here before LOS, so I'll be right back to you.

20 37 26 ACDR Houston. Houston, Apollo.

CC-H Go ahead, Tom.

ACDR Okay. Ask the experimenters on the furnace if there's any concern about having that furnace running with the door open.

CC-H Roger. We got that report awhile ago, and we are in the process of working it, and I should have you an answer shortly.

ACDR All right. Thank you.

CC-H And, Tom, if you're still there, can I talk to you a minute about the Flight Plan this afternoon?

ACDR Sure can. I've got it right in front of me.

CC-H Okay.

CMP And, Dick, tell them that the furnace is running so whatever they come up with may not matter, because we have it going.

20 38 08 CC-H Okay. Thanks, Vance, and I will. Okay. The - it turns out that we've looked at all the things in the morning that needed to be done and prioritized them against the things this afternoon, and the thing that we want to make up is to make sure that we get an OBS and exercise run sometime this afternoon on the three crewmen. What we'd recommend is the following: You're obviously ahead and already started on the furnace and the leg volume so we'll complete that and, also, we'd like to start the EPE prep on time and then when CP and DP finish up on the leg volumes, if they'll start putting on the OBS and can get that exercise out of the way. We think that the AC may be able to do his during the long EPE ops from about 33:10 down to 34:30, and it isn't clear exactly what, in the remainder of the afternoon, we'll have to cancel because, frankly, we just don't know how fast the OBS donning and exercises will go.

20 39 20 ACDR Are you talking about canceling the Earth obs and the mapping for OBS ... ?

CC-H We're talking about it, but it isn't clear at this moment that we have to do it.

ACDR All right. All right.

CC-H But - but, Tom, to answer your question directly, yes, we are. We do consider the OBS donning and exercising more important and we would cancel it if we had to.

CC-H And, Apollo, Houston. I'm going LOS here, and we'll give you a call at Rosman at 32:39. See you there.

20 39 58 ACDR All right.

21 03 14 CC-H Apollo, Houston. Newfoundland through - on VHF. How do you read?

21 04 30 CC-H Apollo, Houston. Through Newfoundland. How do you read?

ACDR ... and then they'll try to get on the - one of the biosensors, and I'm starting ahead on the electrophoresis.

CC-H Okay, Tom. About the first half of your conversation was way down in the mud, and I didn't copy it. I'm sorry. Can you say it again?

ACDR Okay. Deke and Vance are doing the leg measurements, and I'm starting on the electrophoresis, the German one, MA014.

21 05 05 CC-H Okay, Tom.

21 13 05 CC-H Apollo, Houston. I'm not in - I don't want to interrupt what y'all are doing, but when Tom or - anybody that could talk to me about the next 3 or 4 hours of the Flight Plan - could - I'd like to say a couple or three words about it to you. I was cut off short by LOS back there at the Vanguard, and we really didn't finish talking about it.

ACDR Okay, Dick. Let me tell you where we're at now. I just got the EPE prep finished. I'm getting ready to get that started. Vance and Deke are getting on their biosensors. They can either get the - maybe get the thing maybe before or after the mapping pass. Okay, now, you go ahead.

Day 197

CC-H Okay. That sounds good with what we were planning. What we were going to suggest was the following, Tom. We're hoping to - first of all, we do want to get the OBS and the exercise. We would - -

ACDR That's in work.

CC-H Yes. Okay. Understand. Okay, now we would also go ahead and want to do the P20 option 5 and at least we figure we can get the mapping pass - we're willing to give up the vis obs pass that goes along with it, and I guess you guys would be a much better judge of that than us. Looking ahead to the - -

ACDR ...

21 14 19 CC-H Okay.

ACDR Well, let me tell you - here's what I think we ought to do. Looking at this thing here from the time we got, and what it's going to take them, we're now here at 32:54, coming up to 33 hours. I'll be in good shape for the EPE prep and run that. By the time these guys get the OBS on, it's going to take them 20 minutes to do that; you're going to have LOS. Let us go ahead and go get these OBS on, we'll go do the vis obs, and the mapping pass, and then after that at the next acquisition, you can get those two guys working out. Over.

CC-H Okay, before we make the final decision, Tom, let me tell you what we were going to propose. We missed the SIM bay activation this morning and what we were going to do - we cannot do the raster scan without the SIM bay activation. What we were going to propose to you was to delete the raster scan that takes up that ATS pass coming up over there at about 34 hours and 30 minutes and use that ATS pass and that coinciding night period to get the SIM bay activation that we missed this morning.

ACDR Okay, real good. We can go back and pick up that raster scan.

CC-H Okay, and I guess the complication between that and what you suggested was that we're quite willing to

give up the vis obs in order to do that, but we still wanted to get the mapping done.

21 15 44 ACDR

Okay. We may be able to do all this. We'll put the SIM bay activities in there at that time.

CC-H

Okay. But we will plan, then, on doing the SIM bay activation instead of the raster scan and - why don't we just let you guys just go ahead and be working and see how it goes from now. But, definitely, we do want to get the mapping pass.

ACDR

Okay, good. You can get the biomed data in on your remote - on your recorder.

CC-H

Okay. Yes, we can get it either real time on the ATS or any of the STDN passes, like for instance, at Vanguard or Goldstone. If we're LOS, you'll need to go to high bit rate while you're exercising and then - then out of high bit rate when you're through.

ACDR

Okay. That's all I need to go to high bit rate, good. Okay. We're going to press right on here. I'm working - everything's going along good on the EPE.

CC-H

Okay. Real fine. Keep us advised. We're standing by. We still got almost 40 minutes of this ATS pass, so we're sitting here.

ACDR

Okay. I've got - I've already - inhibited all those jets except D1, B2, A3, C3, B3, and D4 on it.

21 16 56

CC-H

Okay.

CC-H

Apollo, Houston. Be advised we're about to change modes on the satellite. We're going to dump the SC data to clean it off for you for this upcoming exercise period and so I'll drop out for about 30 seconds.

ACDR

All right.

21 18 39

CC-H

Okay. And I'll call you when I'm back up, Tom.

END OF TAPE

Day 197

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

21 21 43 CC-H Apollo, Houston. I'm GO for voice again here on the ATS. Standing by.

ACDR Roger, Dick. I'm now starting work on the electrophoresis, and they're getting ready for their bio - their little workout. One thing that nobody ever thought of in the time line is the amount of time it takes to go up and reset the master warning when the O₂ flow goes high.

CC-H (Laughter) I figured that must be be bugging you, because we've been noticing every time that it went off, and it sure does seem like a lot.

21 23 33 ACDR Houston, Apollo.

CC-H Roger, Tom. Go ahead.

ACDR Okay. Have you got the EPE checklist there?

CC-H I sure do. Let me turn to page - I've turned off of it. What page are you on?

ACDR Page 1-2.

CC-H Okay. Go ahead.

ACDR Okay. It says, "Perform steps 9, 10, and 11." Okay, I see what to do. I'll go ahead to the freezer and I can get out that little jewel already and leave it out for 20 minutes, okay? Check this experiment with Bob Nute that - -

CC-H Okay.

ACDR - - it says, "Perform steps 9, 10, and 11." That's written in, and it says ... cryo freezer and place near. Get tool E. Do all that good stuff - -

CC-H Yeah, yeah. I see where you are.

ACDR - - and then remove the sample.

CC-H Yeah, I see where you are. Hang on and let me check real quick. I'll be right back to you.

Day 197

21 25 00 CC-H Apollo, Houston. Tom, yes, you've got it right. After step 2, what we want you to do is go - skip over and perform steps 9, 10, and 11, and after you complete those, go back to step 3, and then proceed right on through.

ACDR Okay. So then just ... the sequence, I'll put in sample 1, 2, and 3 for the run, and I'll pick up the sample 4, which comes out of the freezer as the last one. Right?

CC-H That's affirmative.

ACDR Real good. Thank you.

CC-H Roger.

ACDR Hello, Houston. Apollo.

CC-H Hello, Tom. Go ahead.

ACDR You wouldn't believe what just happened.

CC-H Well, tell me.

21 28 55 ACDR You know I was going after the electrophoresis sample in the freezer? I pulled out the cap, and it came flying out without even having to go after it and took off across the spacecraft at minus 200 degrees. We finally got the little rascal captured, using some used underwear, and we're proceeding on.

CC-H Roger. You're right. I never would've guessed what happened.

CC-H Apollo, Houston. For Tom.

ACDR Go ahead.

CC-H Tom, what do you think the problem was when you got the cap off and the sample came flying out? Was it just the force that you took the cap off, or do you think it was maybe some pressure in there that - that just let it go?

ACDR (Laughter) That's hard to say. There's a few drops of ice and snow, and Vance was helping me,

and the thing came out. And just as we got the lid out and I started to reach down to touch the little - to - you know, extension there to turn it - Bang! The thing just came zipping right out. But it is now well secured and under control.

21 31 13 CC-H

Okay. We were - while it was fresh on your mind, we just wanted to hear what we could about it to see if there was something maybe we could prevent in the future.

ACDR

Well, it was like a minor snowstorm - just a little bitty one that came out. It wasn't bad.

CC-H

Okay.

CC-H

Apollo, Houston. For Deke. Deke, when - assuming you're going to do this mapping pass coming up, when you have the time, I've got an update on the time in the Earth Obs Book on mapping pass Mike 3.

CMP

Okay, go ahead with your change for Deke's mapping.

21 34 34 CC-H

Okay, Vance. The change is - is the stop time for mapping pass M-3. And the correct stop time - the start time is okay, as is the change - all the data for M-2. The stop time for M-3 should read 34:06:40.

CMP

Okay. 34:06, and you were cut out on the seconds. Please repeat seconds.

CC-H

Roger. That's really the only change. It's 40 seconds. 40.

CMP

Roger. Understand.

CC-H

Okay, Vance. And, incidentally, one of the things that we never got a report back down on was - was the VTR cooling activation procedure done yet?

CMP

Negative. It's not done.

21 35 24 CC-H

Okay. At some point, we would like to get it done and get you to tell us. When you do do it, it's on page 1-47 of the Systems Checklist. The reason we're interested in going ahead and doing it is that we had a funny on dumping one of the VTR tapes.

Day 197

We don't think it's any kind of a failure in the -- in the equipment. However, we would like to do a little bit of troubleshooting that's not scheduled in the Flight Plan now. And we don't want to do it until we get that - hoses hooked up.

CMP Okay. I understand --

CC-H So --

CMP And Deke and I are both instrumented, and he's going to exercise first.

CC-H Okay. Real fine.

21 39 52 CC-H Apollo, Houston. Be advised we're through with the DSE dump, and so we've got ATS for the next 15 minutes - 14 minutes. So, Deke, if - if you're getting ready to exercise and can go ahead and start doing it, we will not have to use up the DSE, and we can just catch you in real-time data.

ACDR Okay. How about helping us? Where's the exerciser?

CC-H Okay. Stand by a second.

ACDR ...

CC-H Okay. Hang on a second.

CC-H Tom, it was launched in A-5.

ACDR In A-5. Okay.

CC-H That's affirm.

ACDR Houston, Apollo.

CC-H Roger, Tom. Go ahead.

ACDR Be sure your doctors have on their bifocals there. Deke's going to start exercising shortly.

CC-H Okay. Super. And we got 9 minutes left in the ATS pass.

DMP I'll tell you one thing. You get more damned exercise getting ready to exercise than we're ever going to get doing it.

CC-H (Laughter) Roger. That's the exercise - getting ready.

21 48 54 CC-H Apollo, Houston. Be advised that we do not see any biomed data at all of whether or not Deke has started exercising or not. Have - -

ACDR He's huffing - -

CC-H - - Are you plugged in already?

ACDR - - he's huffing and puffing like mad.

CC-H Okay. Why don't you make sure that he's plugged in there. We don't see any biomed data.

ACDR ... He's plugged in the DM, but that doesn't carry biomed data. We'll have to get it back down here.

CC-H That's affirm. Sorry about that.

ACDR Okay. You better think about this, Dick. The DM's the only cool place. This command module's still pretty hot, and to try exercising down here, I'm not sure how good it's going to go, but the comm cords won't reach from here up to there. We'll take a look at it.

CC-H Okay. Copy. We would like to get at least a little bit of data during - during this exercise period.

ACDR Well, we'll have to come back down in the command module where it's pretty crowded and hot, but we'll see if it'll do.

CC-H Roger, Tom. We still have about 5 minutes left in the ATS pass.

ACDR This isn't quite Skylab.

CC-H Roger. Understand.

DMP Hey, Dick. What do you want down there? Do you want us to get some exercise or do you want some EKG data? I think we ought to give you one or the other.

21 49 46 CC-H Okay, Deke. Why don't you go ahead where you are and finish the exercise? And then when you get through, come back in the command module and plug in for a while, give us some EKG data, and maybe that's the best compromise of the whole thing. We really wanted to do both.

DMP Okay. Well, we'd like to give you both. But I - I think we're going to get neither if we don't do something pretty quick.

CC-H Roger. Understand. I'd suggest going ahead and finish the exercise and then when you get back in the command module, give us some - some biomed data and - -

DMP Okay, we'll do that.

21 50 20 CC-H Okay. And if we've had LOS ATS, just turn on the high bit rate and put it on the DSE and we'll pick it up a little bit later.

DMP Okay.

CMP And, Dick, we are maneuvering to go into P20.

CC-H Okay. Okay, Vance.

21 52 21 CC-H Apollo, Houston. Are you still there? Okay, Apollo, Houston. If you still read, we are going LOS ATS. I'll see you at Vanguard at 33:47.

22 08 00 CC-H Apollo, Houston. Good evening. I have a couple of items that need to be done if somebody has a chance to copy.

ACDR Go ahead, Bo. Glad to see you on duty again.

CC-H Yeah. Glad to talk to you, sir. One is that at 34:07, we need you to perform P00 and then VERB 49 to a solar inertial attitude. You ready to copy?

ACDR Got that.

CC-H Okay.

ACDR 34 plus 07.

CC-H Roger. POO, VERB 49 to roll, 019; pitch, 170; and yaw, 330. And the high-gain angles are pitch, minus 70; and yaw, 050.

22 09 03 ACDR Okay, Bo. At 34:07, VERB 49 to SOLAR INERTIAL; roll, 019; pitch, 170; yaw, 330. High gain is pitch, minus 70; and repeat the yaw, please.

CC-H Yaw was 050.

ACDR 050. Roger. Vance and Deke are right in the middle of the Earth obs mapping, and I'm just finishing the four sample electrophoresis, but we'll get it all done for you.

CC-H Roger. And I have one other item. And at 33:55, we need to end the manual soak and perform the helium injection. That's on Docking Module Checklist, page 7-5.

CMP Okay, Bo. I'm aware of that one.

ACDR At 33 plus 55, manual soak and helium injection, page 7-5.

CC-H Roger.

DMP Are you guys getting biomed data down there?

CC-H Deke, I understand that we do have data. It's poor quality - the data is poor quality.

DMP Okay. ... plugged into the CSM here for this mapping pass.

DMP We'll try to get in some exercising time later.

22 10 52 CC-H Apollo, Houston. There is less than a minute until LOS. We'll see you at Goldstone at 34:03.

DMP 34:03.

22 24 57 CC-H Apollo, Houston through Goldstone for a little over 4 minutes. Standing by.

Day 197

ACDR Roger. Electrophoresis is finished, and now I'm shutting down the experiment.

CC-H Roger. That's good news and when you have a chance, you call me and I'll give you some Flight Plan changes, sir.

ACDR Okay. Stand by. We're pretty busy right now, but we'll call you in a minute.

CC-H Apollo, Houston. We've been thinking about doing the SM experiment activation at about 34:25. Is that a good time for you people to start?

ACDR Yeah, ... will be over then, and we'll go - ... I'm still getting ... electrophoresis thing.

22 29 03 CC-H Roger. Understand. You're still working on the electrophoresis, but you think we can make it.

CC-H And, Apollo, you can do that deactivation of the primary evaporator on the bottom of page 4.0-18 and the WASTE STOWAGE VENT valve, CLOSED, as soon as you figure - finish the electrophoresis ops. And it needs to be done 10 minutes before we start the experiment activation.

ACDR Okay.

CC-H And we're going to be LOS here, and we'll see you at Madrid at 34:26.

DMP Hey, Bo. You guys want any more ... or are we clear to ... that off?

CC-H Apollo, Houston. Say again, please.

22 29 52 DMP Yeah, did you guys want any more biomed data?

22 36 00 CC-H Apollo, Houston through Newfoundland. How do you read?

ACDR Loud and clear, Bo. We're maneuvering at solar inertial attitude.

CC-H Roger. The last data we had said that perhaps you hadn't gotten to that deactivation of the furnace yet. Have you been able to get to it, sir?

CC-H And, Apollo, Houston. We're standing by for ATS acquisition.

CC-H Apollo, Houston through ATS. How do you read?

ACDR Loud and clear. We're deactivating the primary evaporator.

CC-H Roger. We copy. And before you start the SM experiment activation, will you give us a couple of minutes warning so that we can get the ground configured to receive your data.

22 38 37 ACDR Okay. Then you want the SM activation to take place in the solar inertial attitude that you gave us of a 19 roll, 170 pitch, and 330 yaw. Over.

CC-H Roger. That is correct.

ACDR Okay, Bo. We're ... there now.

CC-H And, of course, since you're going to be doing that activation from 34:30 to 35 hours, all of the other activities in the AC's and CP's columns of the Flight Plan are going to be deleted.

ACDR Yes.

DMP Bo, how do you read?

CC-H Read you loud and clear, Deke.

DMP Okay, I guess you guys wanted to know what our ... temp is. It's 691.

CC-H 691

DMP Roger.

CC-H And, Deke, we've got plenty of data off of your exercise.

DMP Okay, I'll go ahead and finish exercising anyway. I've still got the biomed on, however.

CC-H Okay.

22 40 55 CC-H And, Tom, we still show that the secondary coolant loop is working. Have you turned it off?

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ACDR Okay, I thought they told us yesterday because it's still rather warm in here, they're going to leave just the pump on.

CC-H Negative. We decided to turn the whole thing - turn it off, and we think we'll probably do better with it off.

ACDR Okay, Bo. The pump is off. Everything else I had off but the pump.

CC-H Okay, and the SECONDARY LOOP EVAPORATOR has to be OFF, too.

22 41 41 ACDR Roger. I had it to RESET for a minute, then back OFF. I'll do it again.

ACDR Houston, Apollo. How do you read?

CC-H Loud and clear. Go ahead.

CMP Okay, Bo. When - if you're ready, we're ready to start on step 3, SM experiment activation, 1-13.

CC-H Roger. If you'll hold off for a minute or 2, we'll give you a call when we have the ground configured for your data.

CMP Okay.

22 46 44 CC-H Apollo, Houston. Our data system is configured. We'd like to confirm that the WASTE STOWAGE VENT valve is CLOSED, and then you're clear to proceed with the SM experiment activation.

22 47 15 CMP Okay, Bo. WASTE STOWAGE VENT is CLOSED now and - as is - I just closed the battery and the OVERBOARD DRAIN DUMP, also. Ready to go.

CC-H Roger. Go ahead.

22 47 34 CMP Okay. This time CB HELIUM GLOW MAIN B coming CLOSED, from there.

CMP Step 3 complete.

CC-H Copy.

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CMP Step 4 completed.

CC-H Roger.

22 48 38 CMP And we have gray on all covers in the CLOSE position.

CC-H Understand.

CMP Okay, the TIE-DOWN RELEASE is released, and I'll give you voice marks opening various covers.

CC-H Roger. We're copying.

22 49 34 CMP X-RAY COVER, OPEN now.

CC-H Roger.

22 49 50 ACDR HELIUM GLOW COVER, OPEN now, too.

CC-H Roger.

END OF TAPE

Day 197

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

22 49 57 CC-H And, Apollo, Houston. We'd like you to stand by here for just a minute.

CC-H And, Apollo, Houston. We'd like you to verify one more time that the primary evaporator has been deactivated.

ACDR Well, stand by and let me check again. WATER is OFF and it's manually up. ... FLOW is off, and WATER's MANUAL.

CMP Okay. That's verified, and we very carefully did that, and held the door switch closed to - to close the door for 1 minute.

22 50 56 CC-H Roger; good. You're clear to proceed.

CMP Okay.

22 51 07 CMP EUV COVER, OPEN now.

CC-H Roger.

22 52 21 CMP Okay, we've completed step 4. We're waiting 5 minutes.

CC-H Roger. We'll give you a call at 4 minutes.

22 52 38 CC-H And, Apollo, Houston. We'd like BATTERY VENT back to VENT.

22 52 45 CMP Roger. Back to VENT.

22 53 57 ACDR Bo, while we're waiting for some of these items - it takes a while, do you still want us to get these DM height measurements? Over. At 35 hours?

CC-H That's negative. We do not want you to perform those.

ACDR Okay. We'll still go ahead and - you still want to skip the exercise period for Vance and myself, right?

CC-H Roger. We still do want you to do the exercise.

22 54 34 CC-H And, Apollo, Houston. We have a question. On that LiOH changeout at 34:30, if you did not change both of them out this morning, change - if you did not change one this morning, change both now. And did you change one this morning?

CMP That's affirm. We changed one this morning per plan.

CC-H Thank you.

22 55 59 CC-H Apollo, Houston. Thus far the data off of the experiment you've activated looks just great.

CMP Glad to hear it.

CC-H So are we.

CC-H It's 4 minutes now.

22 57 25 CC-H And it's 5 minutes.

CMP Okay. Understand we're - we can proceed with 5.

CC-H Roger; proceed.

22 57 40 CMP Starting - starting the UV TELESCOPE POWER switch OFF.

CC-H Copy.

CMP EUV COVER, OFF now, CLOSED now.

CC-H Copy.

CMP HELIUM GLOW COVER, CLOSED now.

CC-H We show it CLOSED.

CMP Starting X-RAY PURGE.

22 58 45 CC-H Roger.

22 58 53 CMP And the BACKUP PURGE talkback is gray, as it should be.

CC-H Roger. And we'll give you a call at 14 and 15 minutes.

CMP Roger.

22 59 36 CC-H And, Apollo, Houston. On the top of page 4.1-19 of the Flight Plan, everything was deleted because of this experiment activation, except for the activation of the PRIMARY EVAPORATOR and the WASTE STOWAGE VENT valve to VENT, which is down under the DP column. And - -

ACDR Okay, Bo, we got it, and we'll take care of that when we're finished here.

CC-H Roger. That's exactly right; after you're finished.

ACDR Okay; Roger.

23 00 09 ACDR And while we're waiting here, you can pass on the - again on the MA014, the German electrophoresis, the thing just worked as prescribed, and everything looked like it was good.

CC-H Thank you.

CMP Might add that just before starting this experiment activation, I had a visual obs pass over a lot of the Pacific and some of the U.S., as you know. I would say it was a partial success. We had quite a bit of cloud cover, for example, completely over New Zealand. We were hoping to look at a fault zone there and look for some stuff on the water, which was - then - there wasn't much to see around New Zealand, but at Los Angeles, the water just offshore was cloudy but it was very clear inland over the desert and so forth.

CC-H Roger; copy.

23 01 25 CC-H And, DP, Houston. Could you tell us the status of the MA014 helium injection?

DMP Okay, Bo. Yeah, it's all done. I'm up here exercising right now.

CC-H Roger. Understand it's completed.

DMP Rog.

CMP And, Bo, after we finish this, I'll get my exercise.
Are they getting my biomed down there?

CC-H Let me check, Vance.

23 02 24 DMP And, Bo, while you're asking the medics questions,
I got another one.

CC-H Go ahead.

DMP Yeah, I checked my pulse rate, you know, before I
started exercise. I'm running like 48 to 52, some-
where in there. And I've been working up here for,
oh, maybe 10 minutes and about as hard as I could
do in one-g. And I could only get it up to, you
know, around 70 to 75. So I'm not sure exercise was all
that significant. They might want to review whether
they really needed exercising or not.

23 02 59 CC-H Roger. We'd like the exercise, and I understand
48, 52 before exercise and 70 to 75 now.

23 03 07 DMP Yeah. That's not much of a rise.

23 05 33 CC-H Vance, Houston. We don't see any data on you down
here now.

CMP Okay, just a second, I'll check my SUIT POWER switch.

CC-H Roger.

CMP Panel 10 appears to be hooked up okay, Bo. And I'm
on the umbilical for the center couch.

CC-H Understand.

23 06 30 CMP Okay, check again. There was one thing not connected.

CC-H Roger; we're checking.

CC-H Vance, thanks. We're getting data now.

CMP Very good.

23 06 57 CC-H Apollo, Houston. Now we understand that the data
is very clean. This is the data on Vance.

CMP Glad to hear the heart's still pumping there.

23 09 28 CC-H Apollo, Houston. Our data so - shows some problem with the furnace, and we would like you to redo the helium injection that was performed earlier.

CMP Okay, Dick, we got that. You go ahead.

ACDR Okay, Deke said he did it twice which is what the plan calls for. Over.

CC-H Roger. Understand. Deke did it twice.

ACDR Yeah, it's in the procedure.

CC-H Roger. I know he said he completed the procedure. Let me check with Experiments once again.

ACDR All right.

23 10 22 CC-H Apollo, Houston. Experiments say they still would like it done again. They're having some problem here and they'd like that helium injection performed another time.

ACDR All right. That was - was that a total sequence of two shots or just one shot?

CC-H Checking.

ACDR Was that two injections or one injection?

CC-H We would like the two injections, Apollo.

ACDR Okay, in work, and Deke's going back there.

CC-H Roger.

CC-H And, Apollo, Houston. Our wait period has been adequate and you can continue on page 1-15 of the experiment activation.

CMP Okay, we're starting now.

CC-H And, Vance, the doctors are happy with the data they've seen from you, and you can let the commander hook up to the OBS.

CMP Okay. That means that I can take my OBS off now or - or would you still like to see exercise?

CC-H Roger. You can take yours off and - we've had enough data from you, and it looks like you put the pasters on just right and we got good data.

CMP Very good. Thank you.

CC-H Apollo, Houston. The X-ray looks good.

23 13 22 CMP Okay, Bo, we just completed an X-ray purge cal and held it for about 30 seconds. We'll close the door now.

CC-H Roger.

23 13 34 DMP Okay, Bo. I've injected helium two more times. Want anything else done with it?

CC-H Roger, Deke. Read you, and I'm checking with Experiments.

DMP Okay.

CC-H Thanks, Deke. Experiments doesn't want anything now and we'll watch it for a while.

DMP Okay.

23 16 55 ACDR Okay Bo. You should have biomed on me.

CC-H Roger. I'll check with the Surgeons.

23 17 09 CC-H We're getting good data on you, too, Tom.

23 17 21 ACDR All right.

CMP Houston, Apollo. The SM experiment activation is complete.

CC-H Roger. Understand. And you're clear to enable all the thrusters except the A/C ROLL, of course, after the completion here and the covers are closed.

23 17 43 CMP Okay, covers are closed and after what else?

CC-H And, of course, you're also cleared to do that activation of the primary evaporator and WASTE STOWAGE VENT valve as shown for the DP down at about 35.

CMP Okay, will do. Thank you.

23 18 44 CC-H And, Apollo, Houston. For your information, 100 percent on that experiment activation. Everything looks exactly normal.

CMP Well, we'll sure try to bring you back some good data in a few days, then.

CC-H Roger.

23 19 43 ACDR Okay, Bo. As far as looking ahead to the Flight Plan now that we've finished that - Okay, we're going to activate the primary evaporator now ... WASTE STOWAGE VENT.

CC-H Roger, sir. And after your exercise, I guess we'd just like you to settle down and eat, and get ready for the presleep checklist.

ACDR All right. Yeah, what was supposed to be a relaxed day turned out rather busy.

CC-H We all agree.

23 20 25 ACDR One thing, Bo. When you look at this whole sequence, this thing is so small and so loaded compared to say a very similar thing in Skylab, or even some of the other command modules. When one person's in a certain area, he just can't do - he can't do anything in parallels; you got to be in series on a lot of it.

CC-H Understand.

ACDR Okay, Bo. And one last thing before we lose you on ATS. You want us to go ahead and maneuver to our solar inertial sleep attitude when we go over the hill?

CC-H That's the attitude that you're now in.

ACDR Oh. All righty. Well, I'm checking up on the angles here.

23 21 54 CC-H Apollo, Houston. We did miss one little item there. And that's under the CP, where it says enable all jets and configure the DAP. That will then get you in the proper sleep configuration. You're already in the proper attitude.

ACDR All right, we'll take care of that.

23 23 38 ACDR And Bo, one last thing here - we still in contact?

23 23 42 CC-H Roger. We're still in contact. We've got about 2 minutes.

ACDR Okay. It's got outlined in red there; it said, "Configure DSE LOW BIT RATE, RECORD FORWARD, COMMAND in RESET." So you want that done? It's at about, on the Flight Plan, 34:54.

CC-H Negative. That went with the raster scan and it's not required.

23 24 04 CC-H And, Tom, you're completed. We've got enough data on you, and you can unplug your OBS if you wish, but continue with your exercise.

ACDR All right.

CC-H Apollo, Houston. There's about a minute until LOS, and we'll see you at Orroral at 35:08 for a couple of minutes.

23 25 14 ACDR Roger.

23 29 41 CC-H Apollo, Houston through Orroral Valley for 2 minutes.

ACDR Roger, Bo. One item ... mention about the VTR coolant activation. Do we still want that as far as putting that ... hoses on there?

CC-H Roger, Apollo. We would like that VTR coolant activation.

CC-H Apollo, Houston. There is 1 minute until LOS. Next AOS will be Hawaii at 35:26.

ACDR Roger.

ACDR Houston, Apollo.

CC-H Apollo, Houston. Go ahead.

ACDR Okay, Bo. One question. You know these little ... dosimeters that we had - on our underwear - what do you want done with those, because we also have the big personal dosimeters with counters on them. Do you want these brought back?

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23 32 46 CC-H I'll check.

23 46 52 CC-H Apollo, Houston through Hawaii for 5 minutes.

ACDR Roger, Bo. How do you read? Okay?

CC-H Roger. Read you okay. We have one item that has to be done and that is at 36 hours we would like to terminate BAT A charge and initiate BAT B charge.

ACDR Okay.

CC-H And I've got a question for you. Would you like us to get some news together here for your dinner period, when we get into ATS coverage?

ACDR Hey, that would be great.

CC-H And have you people started to eat yet?

ACDR No. We're just preparing. Vance and Deke are preparing, and I'm taking exercise. Over.

CC-H Understand.

CC-H Apollo, Houston, there is a minute to LOS. Next is Goldstone at 35:37.

23 51 41 ACDR Okay, Bo. Real fine.

23 57 54 CC-H Apollo, Houston through Goldstone for about 2 minutes; standing by.

CC-H Apollo, Houston. There is 1 minute until Goldstone LOS. ATS LOS is next at 35:48.

23 59 23 ACDR How do you read, Bo?

CC-H Read you, Tom. Go ahead.

ACDR Oh. Okay. We're just changing headsets and working on food around here.

CC-H Okay. We don't have anything for you on this pass.

23 59 33 ACDR All right.

00 11 01 CC-H Apollo, Houston through ATS. Will you go ACCEPT, please, for us?

00 11 10 ACDR You've got ACCEPT, Bo.

CC-H Roger. And we have some - evening news here if you people are ready for that. Are you eating yet?

ACDR Stand by just 1 minute, and we'll get you on the squawk box.

CC-H Okay; well, when you're ready, just call us.

ACDR Okay, Bo. Go ahead.

00 12 19 CC-H Roger. As you might have guessed, dominating the news wires yesterday and today are stories about the successful launches of the Soyuz and Apollo spacecraft. Yesterday morning, President Ford and Soviet Ambassador Dobrynin watched and applauded the Soyuz launch at the State Department auditorium. President Ford said the launch marks the beginning of a very epic adventure into space and was blazing a brand new trail. Dobrynin traveled to Florida with NASA Administrator James C. Fletcher to view the launch. President Ford watched the launch at the White House on television and was briefed by former astronaut Harrison Schmidt, who is now assistant administrator for NASA Office of Energy Programs.

CC-H Second article is - Washington - The output of the nation's factories, mines, and utilities rose in June for the first time since last September, providing further evidence that the deepest recession since World War II may be ending. The Federal Reserve Board reported Tuesday that industrial production rose 0.4 of a percent in June. Output of consumer goods (including automobiles and household appliances) rose, offsetting declines in business equipment and many materials, such as steel, that businesses use in manufacturing. The reason is that, although production of consumer products has been increasing at a rate fast enough to end the decline in output and produce real growth, a revival of the consumer sector by itself is not sufficient to induce a strong recovery. One government

economist said, "The consumer sector is leading the way. A little more time will have to elapse before businesses begin to increase the amount of money they will spend on plant and equipment." Third item: Tokyo - Japan plans to put cherry trees on the U.S. west coast, and a \$3 million theater in Washington, D.C., as bicentennial gifts to the United States, the Prime Minister's office said today. A committee hopes to complete the details in time for Prime Minister Takeo Miki to announce the gifts when he visits President Ford in Washington in August, the spokesman said. The 550-seat theater would be on the top floor of the Kennedy Center, in space set aside when the Center was built in 1971. Fourth article - "A 2000-member letter carriers nation - union here will join in a nationwide postal strike if one is called," John Estes, vice president of the local unions, said. The president of the National Association of Letter Carriers in Washington threatened a nationwide strike if union and management officials don't agree on a 2-year contract for 600 000 postal workers. "There will be no mail deliveries next Monday if we can't reach an agreement within the week." Even though postal workers are forbidden by law from striking, it was said, "If we have no contract, we will have a right to withhold our services." Owen Young, public service officer with the post office here, said, "We don't know how many workers would stay off the job during an illegal strike. As far as we know, negotiations have not yet broken down, and we are assuming there will not be an illegal strike." Despite the unlawfulness of the strike, about 220 000 postal employees struck in 1970, when a 14-percent pay raise ended the walkout.

00 16 24 CC-H

Here's one about sports. In other news around the nation, a two-run single broke a ninth inning tie, and led major league baseball's National League All-Stars to a 6-3 victory over the American League last night. Secretary of State Henry A. Kissinger threw out the first ball in the game, and the second, too, as a matter of fact, when Rod Carew of the Minnesota Twins who caught it, wasn't satisfied. For Carew's benefit and that of the photographers, Kissinger threw again. Last item? New York - Joe Namath says he wants to play with the New York Jets 2 more years. On that optimistic note, Broadway Joe Namath began

final football negotiations with the Jets today. Neither he nor his attorney are taking a hard line. "We never had any serious problems," Namath said of his dealing with the team that signed him to a \$400 000 bonus when he came out of the University of Alabama 10 years ago. Namath, fresh from signing a \$5 million contract to sell perfumes and cosmetics, was to join his attorney Jim Walsh in a bargaining session with the Jets' president, Phil Iselin, and the team's lawyer, Dick Barovick.

00 17 46 CC-H And the last item I have is from Paris. Police arrested two men for climbing the city's tallest skyscraper with mountain picks and ropes, Alpine style. Police said the occupants of the 58-story Montparnasse Tower complained that the Alpinists were ruining the side of the American-designed building by sticking their sharp-pointed steel picks into the window frames. A police report said the men were asked why they decided to climb the building and replied, "Because it's there."

ACDR (Laughter) Very good. Ah, Bo, thanks so much for the news. Very interesting, all of it.

CC-H Thank you.

00 18 31 CMP You can't blame those guys for wanting to go to higher altitudes.

CC-H I can't either.

00 19 18 ACDR Houston, Apollo.

CC-H Apollo, Houston. Go ahead.

ACDR Yeah, Bo. You might pass on to Farouk - there's tremendous difference down here in this orbit we're at now compared to what we used to fly in Gemini up at 140 to 185 miles as far as observing features.

CC-H Roger. What kind of differences?

ACDR Well, as far as detail. And - -

00 19 43 CC-H You can see a lot more from this orbit?

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ACDR Oh, tremendous more. Also, looks like you're a
lot closer too, comparatively speaking.

00 19 51 CC-H Roger. Understand.

END OF TAPE

Day 198

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

00 22 52 CC-H Apollo, Houston. You can go BLOCK on the computer now.

00 22 58 ACDR MARK.

CC-H And we'd just like a subjective opinion how you think the temperature in the cabin is. We think we've got a configuration that should be suitable and the one we're planning to fly with.

00 23 24 CMP I guess it's pretty reasonable, Bo. We all enjoy going up into the DM though. It's cool and nice.

CC-H Roger. We copy. And, Apollo, I have just a couple of things that need to be gotten up to you. I owe you a couple of block data pads before you go to bed tonight, and so when you have a chance, please call me and I'll give you these and ask you a couple of questions. But looks like you're eating right now, so we'll let you finish that.

00 24 01 ACDR Okay.

00 29 24 CC-H Apollo, Houston. I hate to bother you, but if someone has a chance, we would like to terminate BAT A charge and initiate BAT B charge.

00 30 24 CC-H Apollo, Houston. We hate to bother you, but if someone has a chance, we would like to terminate BAT A charge and initiate BAT B charge.

00 30 35 ACDR That's in work, Bo.

00 30 37 CC-H Thank you.

00 41 03 CC-H Apollo, Houston. We'd like to have somebody give us a VERB 74.

00 41 17 ACDR Say again, Bo?

CC-H A VERB 74, please.

00 41 23 ACDR Roger.

CC-H And we have about 15 minutes left in this ATS pass. Whenever you're ready, we have a couple of items - items - to go through here and we'd like to be able to say good night to you at the end of this pass.

00 41 41 ACDR Okay, stand by.

00 42 22 DMP Okay, Bo. Go ahead.

CC-H Roger. I have a couple of questions. One is, we'd like to verify the position of the BMAG 1, that it is now in OFF.

00 42 41 ACDR That's affirmative. BMAG 1 is OFF.

CC-H Roger. Thank you. And I have a question about the CM height measurements. We would like to know what the measurements were on the CM height last night. They are in the Experiment Checklist on page 1-70 - on 1-60. That's page 1-60, Experiments Checklist.

00 43 13 DMP Okay, stand by.

00 43 16 CC-H And while you're looking through the books, I have some block data here.

00 44 35 CMP Houston, Apollo.

CC-H Go ahead.

00 44 42 CMP Okay. Here's the data on 1-60, Bo; CM measurements at GET 5 plus 52: seated height, 15.5 cent - centimeters; relative [sic] eye height, 27.6 centimeters.

CC-H Understand. 5:52, 15.5, 27.6.

00 45 07 CMP Right on. And turning to your block data, stand by.

00 45 14 CC-H Roger.

CMP Ready to copy block data.

00 45 39 CC-H This is for rev 33, 058:34:55; minus 179.2, plus all balls, plus 016.6; all balls, 113, 001; 161.9; 00:08; 007, 1625.2, 25729, 19:19; 20:40, NA; 309/050, 26:34, 29:19; plus 12.07, minus 159.72. Notes: 1 - assumes

no further rendezvous maneuvers; 2 - assumes rendezvous REFSMMAT; 3 - CM-SM sep, yaw right to 046 degrees, NOUN 48, pitch plus 0.45, yaw trim minus 0.34. CSM weight, 27700; DM weight, 4622. Over.

00 48 03 CMP Okay, Bo. Block data pad rev 33, NOUN 33 starting 058:34:55; minus 179.2, plus all balls, plus 016.6; 000, 113, 001; 161.9; 00:08; 007, 1625.2, 25729, 19:19, 20:40, NA; 309/050, 26:34, 29:19; plus 12.07, minus 159.72. Remarks: assume - assumes no more rendezvous maneuvers; or rendezvous REFSMMAT; CM-SM sep should be yaw right 046 degrees, NOUN 48, pitch plus .40 - 0.45, yaw minus 0.34. CSM weight, 27700; DM weight, 4622.

CC-H Roger. That's a good readback and I have rev 48 for you.

CMP Okay. Understand you have another block data. Ready to copy.

CC-H Roger. Are you ready to copy?

CMP Ready.

00 49 34 CC-H NOUN 33, 082:13:55; minus 198.6, plus all balls, plus 023.6; 008, 328, 344; 181.8; 00:08; 195, 1571.9, 25772, 25:54; 27:08, NA; 037/293, 32:20, 35:40; plus 13.97, minus 162.83. Notes: assumes rendezvous; 2 - assumes orbital REFSMMAT, 3 - CM-SM sep, yaw left to 300 degrees. Note 4 - NOUN 48, pitch trim plus 0.45, yaw trim minus 0.34. CSM weight, 27300; DM weight, 4622. Over.

00 51 43 CMP Okay. Readback, Bo. Rev 48, 082:13:55; minus 198.6, plus all balls, plus 023.6; 008, 328, 344; 181.8; 00:08; 195, 1571.9, 25772, 25:54; 27:08, 037/293, 32:20, 35:40; plus 13.97, minus 162.83. Assumes rendezvous maneuver is already done; assumes orbital REFSMMAT; yaw CSM-SM sep, yaw left to 300 degrees; pitch trim plus 0.45; yaw minus 0.24. CSM weight, 27300; LM [sic], 4622.

CC-H Roger. The yaw trim was minus 0.34.

CM Yaw trim, minus 0.34.

CC-H Roger. And everything else was a good readback.

CMP Roger.

00 53 02 CC-H And, Vance, did you change out the LiOH? And the reason we're asking is that we haven't seen much change here in our data.

00 53 11 CMP No. We haven't started on the presleep checklist yet. And we'll stand by.

CC-H This was - back about 34:30.

CMP No. I guess we had a miscoordination up here and - we did - that one didn't come through.

CC-H Okay. It's no problem. We just wanted to make sure you got it before you go to bed.

ACDR Yeah, that was flagged in the Flight Plan, Bo. We were in the middle of doing that SM activation.

CC-H We understand. And one other item and that was about that umbilical for the exercise. How - you say it's just too long - too short to be able to exercise comfortably up in the DM with the umbilical attached down in the CM.

CMP Bo, it doesn't stretch into the DM, but let us take a look at it tomorrow in the tunnel area, okay?

CC-H Well, we'll take a look at it down here - and see how long it is. It's the DP's that has the - -

CMP Okay.

CC-H - - longest cord.

00 54 48 CMP And do you want the suit hose attached to the VTR all night? Or could that serve as cooling in here?

00 54 58 CC-H I'll check with INCO.

CC-H Apollo, Houston. It seems that we don't need it on the VTR, but we'd like it on the VTR. And we feel that all that heat probably comes into the cabin wherever it is.

CMP Okay. Very good. I slept next to the VTR last night, and I know it's hot.

00 55 51 CC-H Okay.

00 56 47 CMP Houston, Apollo.

CC-H Apollo, Houston. Go ahead.

CMP Okay. I think the argument for - really the reason why I asked if we could have that - those hoses not on the VTRs, it gets good circulation. I think that's why the DM is so cool. We have two hoses circulating air in there. Of course, we can leave the cabin fans on all night. But as you know, they're pretty noisy.

CC-H Roger. We have about a minute and a half here until LOS. And we think that you can turn the three VTR POWER switches to the OFF position for this evening, and leave the hose in the cabin if that's what you wish to do.

00 57 27 CMP Okay. Thank you very much.

00 58 11 CC-H Apollo, Houston. We will see you at Orroral here at 36:41, just a couple of minutes from now.

00 58 17 CMP Okay. Very good.

01 01 44 CC-H Apollo, Houston through Orroral for a little over a minute.

01 01 49 ACDR Okay.

01 02 39 CC-H Apollo, Houston. There are 30 seconds until LOS. We'll say good night to you, and the wake-up time will be as scheduled on the Flight Plan. That's Hawaii at 44:50.

01 02 51 ACDR All righty.

CC-H (Good night.)

ACDR (Good night.)

CMP (See you later.)

CC-H (See you later.)

01 03 05 CMP Canister's changed.

END OF TAPE

Day 198

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

08 07 09 CMP Houston, Apollo on ATS.

 CC-H We are with you, Vance. How do you read?

 CMP Pretty good, Crip. Got a little something to report to you here.

 CC-H Okay. We've been noticing you on the DSKY and seeing SCS, and we noticed that an alarm - ICDU alarm. What else you got?

 CMP Well, at 43:20, approximately, we got a program alarm, IC - ISS light, alarm 3777. Came down here, went under SCS control, wide deadband, kind of looked into it, the ball, the FDAI that is, and the NOUN 20 seem to agree. With that in mind, why, we just had a few minutes to wait, so we thought we wouldn't change anything so that you could look to try to determine what caused the alarm.

08 08 10 CC-H Okay. We're looking at it right now, and it's looking good. Incidentally, Vance, we also showed about 42:32 that apparently you guys had a C&W onboard and reset it, and we never could find anything here. Can you enlighten us on that?

 CMP That's right. A couple of hours ago we did have an alarm. I came down and looked, and there wasn't anything on the display panel. It was a transient apparently, so we turned it off and went back up. And we have BMAG 1 up now. And we had drifted off a little bit in attitude. I don't know if it happened when the alarm occurred or if it happened mainly as I was in SCS waiting for BMAG 1 to come up. But I sort of wanted to try a P52 to see how it all looked, but noticed that you're not supposed to call a VERB - or a new program with this alarm - with this jet fail alarm EMP running, so decided to wait until you came up.

08 09 26 CC-H Okay, that disables it. Let's find out what - specifically what course of action we want you to take here.

 CMP Okay.

08 10 18 CC-H Vance, can you tell us what you think might have been out attitude when you selected SCS control and the fact that the BMAGs weren't warmed up - weren't up yet might have caused that - caused you to go out of attitude, rather?

08 11 03 CC-H Vance, you still reading us okay?

CMP Roger. Loud and clear. I guess you didn't get my last - I said, I think it's possible that we could have drifted off while I was in SCS, waiting for BMAG 1 to come up.

CC-H Okay. That's - that's what we think probably - probably occurred right now. We didn't have data on - on that particular portion of it, so that we could tell - tell exactly what happened. Right now, to make you feel more comfortable at least, everything looks hunky-dory here, and we - had a transient problem of some nature.

08 11 45 CMP Okay. Is it okay with you if I go back to SPACECRAFT CONTROL CMC then?

CC-H We would recommend that. Go ahead.

CMP Okay. And how about BMAG 1? Should I leave it up or power it down again?

CC-H We recommend leaving it up.

CMP I thought so. I - I think that'd be neat.

08 12 59 CMP I'll tell you that alarm sure wakes up a crew. I mean especially the 3777.

CC-H I'm sorry, Vance, I couldn't get all that. Would you say it again about the 777?

CMP I say that - that sort of an alarm sure wakes up a crew.

CC-H Oh, yeah.

CMP And makes them very alert.

CC-H Roger. Understand that. Vance, we suspect that we had some kind of a transient in the CDU right now. We're not - not positive as to what it was.

08 13 48 CC-H Vance, can you tell us whether you did a VERB 40 after you saw the alarm?

ACDR Negative. He did not do a VERB 40. And also when we had the - the warning, Crip, we also had that - a orange ISS light for a while.

CC-H Yeah, we understand that, Tom.

CMP Crip, I did not do a VERB 40, although I was tempted to. I did not do a VERB 40 because it looked like the ball agreed with NOUN 20. But I wonder if you'd like one now to make sure they're really synched real good.

CC-H Negative. We were just asking here so we'd understand what our data was showing us.

CMP Right.

08 14 33 CC-H Okay. Our recommendation is to allow you to get a little more sleep because you've certainly got a heavy workday tomorrow. And that's supposed to start off here in - oh, in about another 52 minutes. Why don't one of you get on the headset, such that if we got a problem, we can - we can holler at you or hear the alarm and go ahead and ... secure the speaker box. And try to get some more rest. We're going to be with you through the ATS here for about another 40 minutes if you need to holler at us.

CMP Okay. Very good. I guess we have an EMP to help out on problems like this, don't we, incidentally - if we find that we have - this sort of a problem. Okay, we got another one, Crip. ISSS [sic] and both of them - a light and PNGS light.

CC-H Copy that. We're looking.

CMP 3 and triple 7. And I'll hit a reset whenever you say.

CC-H Your attitude is looking good. Looks like there are no - no problems on that.

08 15 57 CMP Right.

08 16 32 CC-H Well, we show you got another one.

CMP Right. And another one.

DMP Yeah, down below we have the PNGS and the ISS.

08 16 58 CC-H Apollo, Houston. I see you went into SCS there. We believe that you're getting false alarms right now, and we're looking at some way to mask it.

CMP Okay.

08 23 05 CC-H Apollo, Houston. I guess to take out one more variable here, we recommend that we go ahead and terminate the jet on monitor EMP by reselecting P00. It's masked anyway by having the ISS light on. And to make you feel comfortable, we're going to be watching you most of the time anyhow.

ACDR All righty. Real good, Bob. I will go ahead and select P00 right now.

08 23 36 ACDR Okay, do you want me to reset the program alarm?

CC-H Yes, you might as well go ahead and reset it, Tom.

ACDR Yeah. We still have just the ISS warning light on.

CC-H Copy.

08 26 33 ACDR Houston, Apollo.

CC-H Go ahead.

ACDR Okay. And now, Crip, our ISS sublight has gone out. I don't know exactly when I reset the master alarm, but the ISS sublight stayed on for a while, and while we were working around here, it suddenly went out.

08 26 53 CC-H Okay. And we're also watching that - we've got a repeater on those lights down here, Tom. And we saw it go out but can't seem to correlate it to anything. But that's being driven by an ICDU failure indication, which seems to be a false one.

08 27 10 ACDR Yeah, let's hope.

CC-H Roger that.

ACDR Yeah, there's nothing more that'll wake the crew up than an ISS failed light on the day of the rendezvous.

CC-H Roger. Also, did a pretty good job on G&C.

08 27 42 ACDR And the light's back on again.

CC-H ...

08 29 31 CC-H Apollo, Houston. Tom, we'd appreciate it if you would go ahead and reset that alarm. What we're trying to do - -

ACDR Okay ...

CC-H And, if you could - if you would do that as a matter of course if it reoccurs. The only thing that we've been able to see down here is the possible correlation with some pitch firings. And we're trying to understand that and keep an eye on it although it - can't understand why that would be occurring right now.

ACDR I can't either. Now we're in SCS and wide deadband.

CC-H Yeah. We're watching. That's - that's fine. We - we see you there and it's no problem. Just go ahead and stay there.

ACDR Okay, Bob.

08 30 38 ACDR Hey, Crip. For the ECS ... With those, you know, two sets of hoses feeding in the docking module, it really got cold up there. So we're just going to just operate with one set of hoses into the docking module. Over.

CC-H Okay. We copy that. Just for the record here, can you tell us which set you're going to leave up there, Tom?

ACDR Hang on. The center set; the center hoses.

CC-H Copy that.

08 33 55 ACDR Crip, we just had a roll jet fire, it looks like.

CC-H Rog.

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ACDR Do you want me to damp it? Okay, I've gone to MIN - I've gone to MIN IMPULSE and damped the rate. Back to RATE COMMAND.

CC-H Rog. I - I didn't understand why you went to MIN IMPULSE and stopped the rate. Would you repeat that, Tom?

ACDR Yeah. In other words, we're in SCS, and we suddenly heard the thing fire, and then build up a rate and roll of about 0.2 of a degree per second. So I went to MIN IMPULSE. Most level with the yaw rate. I went to MIN IMPULSE and damped it. We're in SCS CONTROL. In other words, if I hadn't have damped it, we would go ahead and finally hit the deadband, it would have pulled it back the other way.

CC-H Roger. Understand. Its just working in the deadband would have been - been okay.

08 36 11 ACDR I'll say one thing, while they got the G&C people working on that. ... not - no time-critical thing - give us a how-goes-it with respect to how we're doing on our budget in RCS and H_2 and O_2 .

CC-H We'll get that up to you.

08 37 10 CC-H AC, Houston. Tom, for your information on consumables, we're right on on H_2 and O_2 . And on RCS propellant, we're 39 pounds below the - the nominal line. And, of course, remember in the Flight Plan Supplement, we got predicted curves on those things if - if you just wanted to take a look at that.

ACDR Okay; good.

08 39 14 CC-H AC, Houston. Tom, can you give me an idea what - how you're configured in the vehicle as far as listening now? Am I keeping everybody awake talking to you or - -

ACDR No. Hey, look after that - no sweat, Crip. Vance has already shaved, and Deke is shaving, and I'm starting to prepare breakfast, while keeping the comm here in the left seat. So after that ISS sublight, nobody's going back to sleep.

CC-H Okay.

ACDR I'm the only one that's on the headset right now.

CC-H Okay; understand that. I guess when Deke gets all squared away - I think yesterday they talked a little about the problem we were having on the furnace. They had to go back there and check the helium a couple times. The thing is acting like it's leaking helium out. Consequently, we're going to have to - to end up deleting that one sample that we were going to do today before we do the joint sample with the Soviets. And I'm going to have to modify - his time line a little bit, and I'd like to talk to him about that when he gets a chance.

08 40 13 ACDR Okay. I'll talk to him as soon as he gets the headset.

CC-H Okay. No rush. We got plenty of time here.

ACDR Okay, Crip. You say they're leaking helium from what, the helium source or from the furnace? Over.

CC-H Well, from the - from the furnace itself. What it looks like is that when you inject helium into the furnace, it starts coming down at the predicted rate that it should. Then - but after it stays in there awhile, it - it acts as though the helium must be leaking out of the furnace because the cool-down rate goes back to - to that that we normally get with the vacuum.

ACDR Understand.

08 41 15 CC-H AC, Houston. Tom, it would help us out a little bit, maybe, on trying to see if we can find a correlation, if you would select MINIMUM IMPULSE and give us a minus pitch command.

ACDR All right. I'll go to MIN IMPULSE on SCS and give you a minus pitch command. Okay, here we go with minus pitch.

08 41 39 ACDR MARK it. There we go.

08 41 44 CC-H Okay, We're looking at it. It didn't seem to generate one for us.

08 46 16 ACDR Pardon me, I just inadvertently hit the - -
CC-H I'm sorry, would you say again, please?
ACDR I just inadvertently hit the hand controller. Now
I got it locked up.
CC-H Okeydoke,
08 48 17 CC-H Apollo, Houston. Tom, we would appreciate it, since
you're up and can watch things for us, if you would
go - go ahead and go back to CMC CONTROL. That'll
allow us to see what the attitude errors are and
correlate it with - with our jet firings, if you
don't think that'll be a problem.
ACDR Okay, I'll go back to CMC.
08 48 35 ACDR MARK it. In CMC.
08 52 35 DMP Crip, you still with us?
CC-H Yes, sir.
DMP Okay. Would you guys like to have the old daily
status report?
CC-H I'll tell you what, we're just coming up on where
we're going to have LOS here. And we're going to
see you again at Hawaii in about 15 minutes. Possibly,
if we can get it from you there, and we'll also talk to
you about the - the furnace procedure that we want
to - want to use. It calls for you about there to
shut down the furnace. We do not want you to shut
down the furnace, and we're going to - going to tell
you what you - we want you to do. So you can hold
up on any activities regarding that until we get with
you.
DMP Okay, great. Thank you.
CC-H Okay, fine - -
DMP I'll see you ...
CC-H We are getting ready to lose you here and again,
we'll see you at Hawaii in 15 minutes.

09 06 43 CC-H Apollo, Houston talking at you through Hawaii.
We've got you for 5 minutes.

DMP ... do you read? How do you read?

CC-H Okay. A little weak. How me?

DMP ...

09 07 05 CC-H Apollo, Houston. How do you read?

DMP Okay, Crip, we read you.

CC-H Okay. Understand you're reading me. I'm - I'm still getting you very weak. Got several items I need to - to run down here primarily regarding the furnace. Is - is the AC listening? Tom, I have one item for you first.

ACDR Go ahead, Crip.

CC-H Okay, I had you terminate the jet on monitor while ago, and the Flight Plan calls out about - coming up now that we also wanted you to zero the NOUN 26's. And that's it, just do the VERB 21 NOUN 26 ENTER it and put in all balls.

ACDR Okay.

CC-H Okay. And I've got Deke with me. I can talk to him about furnace operations.

DMP Okay, go ahead. Go ahead, Crip.

CC-H Okay, fine. I guess before I start into that - that - is - if Tom has got time, he can go ahead and initiate the VERB 49 that we've got called out at 45 hours right over on the next page of the Flight Plan. And we can take a look at it here while you're doing the maneuvering. That's just to set you up for the next ATS pass.

DMP Okay.

09 08 40 CC H Okay. Deke, I don't know whether you heard me talking to Tom earlier about the furnace, but that helium cooldown procedure doesn't seem to be - seem to have

some kind of a problem with it. What we'd like to do, if you've got time to go up there now and take a look, we'd like to get a pressure reading, please. And also we'd like to verify that the - the ISO and the vent valves of the furnace are closed good.

09 09 06 DMP Okay; stand by. I'll go give it a whirl.

09 10 17 DMP How do you read?

CC-H Just getting a lot of squeal there. We're with you.

DMP Okay, I'm reading ...

CC-H I'm sorry, Deke, you're completely unreadable due to that box - through the box due to feedback. Tell you what, if you'd just note the thing down, and before you - if you're reading me, before you go down in the command module to come back, what we would like to do is to inject air into the - to the furnace. And if you've got the Docking Module Checklist handy, all we want to - need to do is to make sure that the valves on 880 are closed, like we just talked about, the ISO VALVE and the VENT VALVE. And then we need you on the helium supply box to open the two furnace valves and open the FROM DM ATMOSPHERE valve for 10 seconds, and then close it again, and then close the two furnace valves. That's just to put air into the - the furnace and allow us to cool down a little bit more rapidly.

09 12 01 DMP Hey, Crip. Could you give me a ..., please?

CC-H I'm sorry, Deke. I can't read you at all through that - through that box. We're 1 minute from LOS now, and our next station contact will be through the ATS at 45:18.

CC-H Okay; okay. With that attitude, the ATS angles that you've got in your Flight Plan will be okay to pick us up there, and we do not want you to do any furnace prep operations for the SA001. We'll talk about that later.

ACDR Roger. What page of the checklist did you want Deke to go to?

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TAG Tape 198-02/T-20
Page 11

CC-H Okay, it's the furnace shutdown procedures, on - in
 Docking Module Checklist, 7-6. And we want
 him to perform steps 2 and 3; steps 2 and 3.

ACDR Okay. Steps 2 and 3 on page 7-6.

09 13 01 CC-H That's affirm.

END OF TAPE

Day 198

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

09 39 43 CC-H Apollo, Houston. Talking at you through the ATS. Got you for about 46 minutes. How do you read?

09 39 52 ACDR Read you loud and clear, Bob.

CC-H Okay, fine. I - due to the problem we were having talking to Deke through the squawk box, I guess I got several items I need to run down with him on the furnace, still; and then we can pick up the status report.

ACDR Okay. He's just coming on the headset now.

CC-H Okay. No rush.

DMP Okay, Crip. I went ahead with that procedure per checklist.

CC-H Okay. Understand you did do that procedure on injecting air as we talked about.

DMP That's affirmative.

CC-H Okay. And did you pick that up just about the time - about LOS at Hawaii?

DMP Yeah.

CC-H Okay. That's good.

DMP And I recycled the valves.

CC-H Okay. Good deal. What we're going to do now is if you can - have got your Flight Plan and your Docking Module Checklist handy, I'm going to just have you make some notations in it about how we're planning on handling the furnace ops for the - at least for the rest of the day.

DMP Okay. We're kind of in the middle of breakfast here and we don't have the DM Checklist. We do have the Flight Plan.

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CC-H Okay. Well, we - the ones in the DM Checklist are kind of minor. I can give them to you now or if you want to hold up until you finish breakfast, we can do that.

DMP Okay. Stand by. Vance is going to get our spare here.

09 41 38 DMP Okay, Crip. We got it.

CC-H Okay. Before we get started in it, basically what we're going to do is to eliminate this sample, SA001. And we're going to delay taking out the - the sample you got current - currently in there. If you can look - we already talked about deleting the prep you had at 44:55 and we want to delete the prep - or the ops at 45:40, 45:40.

ACDR Okay, Crip. We're going to delete sample 001, right?

CC-H That's affirm.

DMP Okay.

CC-H Okay, fine. And there is a - over at 47:20, you have a - an "End manual heat soak and perform helium injection." What we would like you to do is to add a furnace shutdown, page D/7-6, and that will be for MA041, which you currently got in there. I would like to warn you that the thing - the handle where you grab it, or the end of the sample, is going to be down where it's certainly cool enough to touch, but the other end is going to be hotter than normal. However, we still want to go ahead and get it out so it won't interfere with any of your joint operations today. It shouldn't be any problem, just warn you, don't touch the - the end of the sample; only grab the end that's sticking out of the furnace.

09 43 26 DMP Okay, understand. What you're saying is we're going to take those samples out now instead of waiting until we're into the joint activities with the Russians. Is that correct?

CC-H We're going to take the samples you've got in there out at 47:20, that period of time just before you close out the docking module.

DMP Okay.

ACDR Roger. I got that. The furnace shutdown 40 - for 041 at 47:20.

CC-H Okay. That's - that's fine. And if you'll note over at 52:40 in the Flight Plan, we call out a helium injection there. Now that was - just delete it because we haven't got anything in the - in the furnace at that time.

ACDR Roger. I see that.

CC-H Okay. Also, at 56 - -

ACDR Okay. Do you want us to go ahead and do that helium inject or not?

CC-H No, we want you to delete it at that time, because there's nothing in there and no reason to do it.

ACDR Roger.

09 44 32 CC-H Okay. At 56:50, we have a furnace shutdown that we want you to delete, again because there's nothing in there.

ACDR Okay. Got the deletion at 56:50.

09 45 05 CC-H Okay, fine. Since we're talking at you through the ATS and we're getting ready to dump our tape recorder, we're going to have to change our modes on it. I'm going to drop out here for about 30 seconds. I'll give you a call when we've got comm reestablished.

09 46 20 CC-H Apollo, Houston. How do you read now?

ACDR Loud and clear, Bob.

CC-H Okay, fine. Those last two entries that I gave you, the ones at 52:40 and 56:50, are the ones that end up occurring in your Docking Module Checklist. And they're just repeated in there and all I was going to do was to have you delete them out. I guess, just as a point here, normally when - when you're taking and getting ready to put in the sample from Valeriy, Deke, it will - you normally have to pull out a sample. Of course, this situation is - there's not going to be a sample in there.

DMP Okay, copy that.

CC-H Okay, I guess the only other item I didn't get off to Deke earlier, if he had a chance to read the pressure in the furnace before he went ahead and made the - the air inject. We would be interested in hearing what that voltage indication was.

DMP The voltage was zero.

09 47 27 CC-H Roger. Understand it was reading zero at that time. Deke, I guess one other question that we had hanging fire here and normally we wouldn't go into this kind of thing, but since things were getting moved around quite a bit yesterday and we need to make sure it was off, can we verify that the biostack was turned off yesterday morning per schedule? The reason for that, it's got a limited battery life on it and if it was left on, it - we wouldn't be getting to use it post - in the - the post joint phase.

DMP Well, none of us can answer your question, seems like. Stand by 1.

ACDR Yeah. Crip, do you read?

CC-H Yes, sir.

09 48 17 ACDR Yeah, it got turned off.

CC-H Okay.

ACDR It's logged in the Flight Plan.

CC-H Okay. That's - that's all we need to know.

CC-H Okay. And I guess whenever you guys get around to it, we'll be glad to take your morning status report.

09 48 52 DMP Okay, I'll give it to you right now. Okay, ready to copy, Crip?

CC-H Ready to copy.

DMP Okay. On the commander: menu, everything eaten for breakfast; lunch, missed applesauce - couldn't find it; and evening meal, missed the stewed tomatoes, couldn't find them, and had an orange-pineapple - supplement.

09 49 47 DMP Are you ready to go on?

CC-H Roger. Understand on that last that the orange and pineapple was an addition?

DMP That's affirm.

CC-H Okay.

DMP Okay, then going over to the medical log. Day 2 PRD, 11001; sleep, 4 good hours and 2 fair. No medication, and he is full of water. Carrying a full tank. Okay, and ready with the CP whenever you are.

09 50 39 CC-H Press on.

DMP Okay. Breakfast and lunch were standard. Dinner, no cranberry sauce, couldn't find that, and add an extra strawberry drink. And stand by for the medical log here. Okay. His PRD is 48062. Had about 4 good hours of sleep and 1 fair, with no medication, and estimates about 75 seconds on the water gun. Okay. Go to the DP whenever you're ready.

09 51 45 CC-H Press on; we're with you.

DMP Okay. Breakfast, standard; lunch, no salmon or rye bread, couldn't find either one of them. Oh, yeah, we found the salmon later in day. It's still around here somewhere. Okay. In the evening, a couple of problems there. Couldn't find the vanilla pudding, so scratch that. And the macaroni and cheese, I couldn't rehydrate it, and I was going to try to eat it dry and as soon as I opened the package, all those little critters started flying around the cabin, so we stashed that one quickly. And the same happened with the chocolate nut cake, that was all crumbs and a total disaster so we stashed that before it got out of control. I had two pineapple and oranges. Okay, go to the medical: PRD, 61002. And on the sleep, I had 2 to 3 hours of super sleep and a couple fair to poor. I think we should comment on all of our sleeps. We had a MASTER ALARM here about 4 hours after we went to sleep and then we had another one later and we all got up for that one and been up since as you're aware of. And I slept in the DM last night, and it's pretty cold in

there. I think that's one reason I didn't sleep too well. Vance slept in the tunnel and that seemed to be perfect. As far as water, I had 15 gulps and I've calibrated and I think about a 5-second flow per gulp, for whatever that's worth. And that is the end of the old status report unless there's something you'd like to know.

CC-H Okay, real good. We - we got all that and appreciate the calibration there. Hey, one item. Apparently, you gents asked about dosimeters yesterday, and to clarify to make sure we're talking about the same ones you were asking about returning and we believe you were asking about the passive dosimeters that are sewed into your CWGs. Is that affirmative?

09 54 13 DMP We're talking about the ones that were on the launch underwear, yeah.

CC-H Okay, fine. What we're supposed to do there is your other CWGs for entry are stowed in A-1 and we are supposed to end up bringing back your used CWGs, with the passive dosimeters in them, in A-1. So, they are to be saved and returned.

DMP Well, okay. We removed them from the underwear, and we got those that are little hot pockets here because we were assuming we were going to throw that underwear away.

CC-H Okay, you can just put them so that we can find them in A-1 somewhere and that will be fine.

DMP Okay.

09 54 57 CC-H Yeah. Deke, in - apparently you guys are having what sounds to me like quite a bit of problems finding certain food items. Anything you think we can do to - to help you out on some of those? Are they just not stored where you think they're supposed to be?

DMP Well, we ended up, I think, with things strung together and pull them out in sequence, and that seems to be working fine. I think what's happening here is that there's some extra items on some of these meals that are stowed separately and those are the ones we haven't located properly.

09 55 30 CC-H Okay, we - we'll check into it and see if we can't give you a little bit of help there so you won't be missing so many of those items. On that rehydration problem you had on the macaroni, was it just you couldn't get the water inserted or - or what?

DMP No, you can get the water in all right, but it was pretty dense stuff and there's no way in zero g to get it to mix - -

CC-H To get it mixed up good. Okay, understand the problem.

DMP Yeah. Right. And what we started doing this morning, we pulled out the menu and looked at it because we weren't doing that before, you know, and we weren't sure we missed something at all until we went to log it and discovered, "Hey! I was supposed to have that," and we didn't have it. So we'll try to look at the menu here in the future when we get a chance.

CC-H Okay. I'm with you. One other item I guess I'll mention here and let you do with it as you see time fit this morning ... We scrubbed out that height measurement DTO that was scheduled yesterday because we got so far behind. If you gents feel like you've got time enough to - to get it in sometime this morning, that will be fine and if you don't, well, use your own discretion. If time is short, our priority would be to get Vance, since we've already got a preliminary reading on him, and as our intent is to get a curve of how the change occurs. So if you could only get one, he would be the prime man we'd be after.

09 56 51 DMP Okay, we'll see how we're running on time and do the best we can with it.

CC-H Okay. And we do not need a waste-water dump as scheduled this morning; we do not want to dump it.

CMP Roger, understand. And when we chlorinated last night, we again opened the potable and - to perform the chlorination and we didn't close it. I presume you don't mind if we leave it open now or would you prefer to have it closed?

09 57 20 CC-H We would like to go ahead and close it if we could.

CMP Okay.

DMP Are we just coming up on Africa, here?

CC-H That's affirmative.

DMP Man, we're looking at some fantastic scenery here; weren't sure where we were.

DMP We can see fires, grass fires, and that sort of thing burning down here just like you can from 40 000 feet, Crip.

CC-H Roger.

DMP They're all over the place.

09 58 33 CC-H Deke, one item I men - might mention to you on that air injection you did. I guess we want you to understand that procedure because we're probably going to be - be asking you to use it several times and it might be worth your making a note about on your Docking Module Checklist someplace, what you do when you - when you inject air. But, basically, it just those steps that - those two steps in the shutdown procedure.

DMP Rog. Copy. Thank you.

CC-H Okay, the only other item was, we had that little problem with the hatch on the heat shroud for the furnace. And we would prefer here, even though I guess it was on, that we - we'd figure out a way of closing that. Our recommendation is that you take one of your little sticky pieces of Velcro and put a patch on the furnace shroud itself, and the other side on that strap on the hatch that's normally used to retain it to the bulkhead, so that you can just Velcro the hatch closed.

09 59 38 DMP Well, I tell you, Vance came in there to help me after a while, and he's stronger than I am, I guess. He gave it a try and finally got it closed.

CC-H Okay, understand that - that he was getting the - the normal connector to go ahead and close then.

DMP That's affirm. But it binds pretty good, and I think your suggestion is still a good one.

CC-H Okay.

CMP It looked like you could - looked like, Crip, you could trim some of that rubber sealing material right near the hinge, and that might help to let it close. It takes about all the strength a guy's got to close it.

CC-H Okay, I guess you might still look at going ahead and doing that Velcro because we think it would be adequate to go ahead and just Velcro it closed.

10 01 05 CC-H Deke, just to make sure we understood. You - while ago, when you cycled those valves on the furnace for us, the ones that vent overboard, before you cycled them are you pretty positive that - that they were in the closed position?

CMP He thinks so.

10 01 25 CC-H Okay. Fine.

10 12 48 CC-H Apollo, Houston. Don't know how busy you are there, but if you are interested, I could give you a little bit of the - the local morning news. Otherwise, we can hold it up and Bo can repeat his performance of last night and give you some this evening.

CMP Hey, that sounds great, Crip. Need morning and evening news both.

CC-H You haven't heard me read the news yet, so I don't know whether you're going to think it's so great or not. But I'll be glad to give you what I got. Little bit on your - -

CMP You have a - you have a reputation as being a great newsman, from Skylab.

10 13 19 CC-H Oh, yes. I got several reputations from that mission. An item regarding your cohorts up there. It says, "Don't we look like the Jack of Diamonds," joked the Soviet cosmonaut as his partner drifted upside down beside him in their Soviet spaceship.

"We're proud of you because you're doing everything so well," the Soviet ground controller replied, as the space duo readied for today's linkup with the three American astronauts. Lieutenant Colonel Alexey A. Leonov and his civilian partner, Valeriy Kubasov, were so busy with space chores Wednesday, they didn't have time to stow away their - the blastoff suits and helmets. But the two cosmonauts promised television viewers to have their tiny cabin tidied up in time "to receive our guests." So it sounds like they're looking forward to seeing you. One of the tasks taking up so much of their time was repairing a balky television camera that had prevented viewers on Earth from watching their activities in space. Leonov and Kubasov got up an hour earlier than planned to work on the camera, which was finally fixed under the direction of experts at their control center. The picture of Leonov with Kubasov floating by upside down highlighted the first day of cabin telecasts to millions of Soviet viewers back on Earth. And we even have a - have an item for the commander, there, from his state. From Hugo, Oklahoma. Searchers Wednesday flew over the brush in airplanes and tramped on foot and horseback, hoping for a sign of two baby elephants. To Dixie Loader, it was like pounding the neighborhood looking for a missing pup. "They are like pets," she said. "They mean something to us other than just working elephants. You know how you have a pet dog or cat and it was - has a sentimental value." Apparently, she was driving a truck loaded with five elephants from Michigan to Mexico, and stopped to rest in the winter quarters of the Carson-Barnes Circus Saturday. ... and Lilly, the smallest of the five, at 4-1/2 feet and 1000 pounds to 1500 pounds each, were spooked and bolted into the countryside. So I guess we got some new wild-life in Oklahoma. An item regarding some weather. We're getting information from San Juan, Puerto Rico, that a cloud of sand, from the African Sahara, is hanging over the Caribbean Wednesday, inhibiting, for the second time this month, the chances of rain to ease the widespread drought. Jose Colon, the Weather Bureau regional director, said the sand cloud, which had blown thousands of miles across the Atlantic, was at a height of about 8000 to 10 000 feet. Colon said the sand was reducing the

amount of the Sun's radiation reaching the Earth and so diminishing the chances of rainfall. The Caribbean region has been suffering from a serious drought during most of 1975, reducing agricultural production and, in the case of Haiti, leaving about 350 000 rural peasants on the brink of starvation. Kind of in contrast to that, another round of rain showers has splattered the east coast Wednesday, dumping up to 6 inches of rain on parts of Georgia. The rains threatened to worsen conditions in flood-torn New Jersey, while state officials pleaded for disaster aid. Flash-flood watches were posted from Virginia through Maryland and Delaware at - and for an area including northern New Jersey and south-eastern New York, including Long Island. So when you guys work your way over there a little bit later today, you might see quite a bit of clouds, apparently. To show you it's getting tough all over, City Hall employees in San Francisco have been advised to bring their own towels if they plan to use the washrooms. It's a budgetary problem. The washrooms are without paper towels because the Buildings and Ground Maintenance Department ran out of money at the end of the fiscal. However, city officials promise that the towels have now been ordered and should be in the washrooms in 2 weeks. It's a tough life.

ACDR Yeah.

10 17 14 DMP Okay, Crip. We noted all that with pleasure.

CC-H Yeah. Not very exciting news, I'm afraid, I got to give you. But apparently, all of it's fairly reasonable.

CMP I heard you used to read the funnies, too.

CC-H I can't read the funnies, because I keep getting choked up. And you can't talk while you're laughing.

CMP Okay.

CC-H They used to tell me that, when I read the news, that was the funnies.

CMP Could be, yeah. That's great, Crip. And this morning, we had more time to listen to that sort of thing than yesterday morning.

10 18 01 CC-H Yeah. A little bit more relaxed today. I guess - mainly because you poor guys had to get up so cotton-picking early and tend to your little problem there. I guess - you know, let - let me give you a little bit of information. We're still looking into that. I guess we haven't had a repeat of that ISS alarm. We've noted that we had something almost identical back on John Young's flight, on 16, which we ended up attributing to a diode problem in the ICDU's failure detection logic. And that really wasn't any of a problem other than giving nuisance alarms. We're still looking into it, and any more information we can get - get to you, we'll get back with you.

CMP Okay, real good. We haven't had it for quite awhile. Do you think it could in any way be associated with the EMP we had running last night?

10 18 53 CC-H Well - we'd kind of thought of that. But we ended up getting one after, I believe, we did terminate it.

CMP Okay.

10 20 25 CC-H Apollo, Houston. We don't need it now, but before you terminate it, I'm afraid we're going to have to ask you for another battery charger current and voltage. The reason for it is that we're - we're dumping data, which we hadn't planned on doing right now, covering up the dump - ... we had planned on a data dump but, unfortunately, it's covering up our battery charge, and to help us keep a status of how much juice we've got in those, we need that information.

DMP Okay, Crip. I'm reading about 39.2 volts and about 1.1 on the amps.

CC-H Okay, Deke. Thank you very much.

10 21 17 CC-H And, if you'd like, you can go ahead and terminate that charge at this time.

DMP Okay.

10 24 46 CC-H Apollo, Houston. We're coming up on LOS through the ATS. The next station contact will be through Hawaii in 16 minutes. That's 46:21. 46:21.

DMP Okay, Crip.

10 26 17 CC-H As we go over the hill, we're seeing to the C&W.

DMP Solve our MASTER ALARMS and that stuff, hear?

10 26 44 CC-H Can you tell us what it is?

10 39 28 CC-H Apollo, Houston. We're talking at you through Hawaii. Got you for about 2 minutes here.

ACDR Okay. We can read you. Crip, I've got a question.

CC-H Go ahead.

ACDR For the G&C's, if we don't get this thing fixed during rendezvous, and if we're in these program sequences like 33, 4, and 5, and this comes up, is that going to stop the sequence on us? (Music)

CC-H Okay. We have checked that all the way through and it will not interfere with anything as long as the alarms are false, which is - that's the indication that we have, that they are now.

ACDR Okay. (Music)

10 40 18 CC-H For the DP: Deke, would you like to make those minor modifications to your Docking Module Checklist regarding that furnace, or do you understand it well enough such that when you come to them, and - that you will just delete them.

DMP Well, I think I understand it, Dick [sic], but I'd just as soon make them anyway, just so I got them.

CC-H Okay. If you've got that checklist handy, I can tell you where they are and you can go ahead and scrub them.

DMP Okay. Stand by a sec. Go ahead. (Music)

CC-H Okay. First one is on Docking Module Checklist page 2-4.

DMP Okay. 2-4. (Music)

CC-H Okay. In step 7 down there at the bottom, left-hand side of the page, last three lines, we can just delete those out regarding the helium injection.

DMP Roger.

10 41 13 CC-H Okay. And then on page 2-21, I'm - I'm -

CC-H I'm sorry, on 2-22.

DMP Okay.

CC-H Okay. Right below the photo there, it has doing a - "Perform furnace shutdown procedure." You can delete that since we've already got it shut down.

10 41 48 DMP Okay.

CC-H Okay. One thing you should probably note, there. If you've done the shutdown procedure we've called for earlier, you probably got the - the little caps installed in the furnace and the hatch closed, and of course, you will have to open the hatch and remove the caps so you can install MA150.

DMP Right.

CC-H Other than that, that's - that's all we got. I'm going to go ahead and tell you good morning here. And next station contact is going to be through Vanguard in 7 minutes, and I'll be turning you over to Richard and he'll be talking at you there.

10 42 20 DMP Okay. Thank you, Crip. We appreciate it all.

CC-H Okay. Have a good morning, and a good day, and a good rendezvous. Next station contact again, Vanguard at 46:30 - 46:30.

CMP See you later, Crip.

CC-H Roger.

ACDR Roger. Thank you, Crip.

10 49 28 CC-H Apollo, Houston. Good morning through the Vanguard. Got you for 5 minutes.

DMP Hello there, how you doing this morning, Dick?

CC-H Hi, Deke. Good morning to you. We'd like to have ACCEPT if we could. We're going to get you a new CSM and Soyuz state vector, and when somebody can copy, I've got an NC2 preliminary pad in the Rendezvous Book, page 1-12.

DMP Okay. Stand by. You're way ahead of us. We haven't even got that book out yet.

CC-H (Laughing) Well, there's no - there's no big hurry; there's plenty of time for it, Deke. When you get ready to copy, I'll read it to you.

DMP Okay.

10 51 40 DMP Okay. Go ahead.

ACDR Okay.

CC-H Okay. Starting with NOUN 28. 048:31 four balls; minus 024.4, plus four balls, plus four balls; 340, 047, 359; 011.4, 00:01. Weight, 32178; trims, plus 0.69, minus 0.52; star check, star 14; 178.6, 13.2. And the TPI T_{ig} time, 050:53:00.00. Go ahead.

ACDR Okay. Read it back here. Deke and I both copied it. 048:31 four balls; minus 024.4, plus all balls, plus all balls; 340, 047, 359; 011.4, 00:01. Weight, 32178; pitch trim, plus 0.69, yaw trim, minus 0.52; star check, 14; 178.6, 13.2. And the TPI T_{ig}, 050:53:00.00. Over.

10 53 41 CC-H Okay, Tom. You got it right. That's a good read-back. The vectors are in. You can go back to BLOCK. We're about 30 seconds from LOS, and I'll be talking you again when we get on the ATS and I'll tell you about the rendezvous. But I can tell you in a short word today that it's just about as close to - we're set up to be just about as close to nominal as we could be. I'll have a few more words for you to tell you what you can expect, but there's no problem.

END OF TAPE

Day 198

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

10 54 05 ACDR ... Sounds great; sounds great.

10 54 11 CC-H Super. And good morning to you, Tom. We'll see you at the ATS.

ACDR Roger.

11 10 42 CC-H Apollo, Houston through the ATS. How do you read?

ACDR Read you loud and clear, Dick.

CC-H Okay, Tom. Whenever you have a second, I got a couple of very minor things in the Rendezvous Book, and I thought I'd give you a couple of words about the rendezvous today.

ACDR All right. Go ahead.

CC-H Okay. If we could, why don't we do the book first. The first comment is on page 1-10.

ACDR Okay. We're there.

CC-H Okay. Crip called this up to you later - earlier in the Flight Plan. I just wanted to clean up the book. At 47:20 on the left-hand side, you ought to delete that entry that says "End manual heat soak and perform helium injection."

ACDR Okay. We've got that. Deke's got it, also, I think, in the Docking Module Checklist there.

CC-H Yes. Okay. Yeah, I was here while Crip was talking to you about that. I just wanted to make sure you had a clean book to start this morning. Also, on the right-hand side of the page, on the TV checklist, we need to add a step on panel 400, that's the VTR, to get the POWER INTERLEAVER and POWER TELEMETRY switches, two of them, to ON.

ACDR Okay. We've got everything. We have three OFF now. You want the POWER to INTERLEAVER ON, right?

CC-H That's right. The INTERLEAVER and the TM POWER switches need to go ON. The VTR, naturally, can stay OFF, until it has to come ON per the Flight Plan. Incidentally, while I'm talking about that, I'm not sure what your hose configuration is. But - what we desire is to go ahead and activate that VTR cooling activation on page 1-47 of the systems book, and then we can stop fiddling with these extra two switches.

ACDR Okay.

CC-H Okay. Next thing, Tom, if you'll turn the page back to - over to page 1-12, I'll give you some high-gain angles.

ACDR All right.

11 12 54 CC-H Okay. Over there on the left side. Pitch, minus 24; yaw, 149.

ACDR Roger. Pitch, minus 24; and yaw, 149; and that's at 48:20.

CC-H That's - that's right, that's correct, Tom. Okay. Let me just say a couple words about the rendezvous. After doing the little out-of-plane correction yesterday, we're set up right on centerline, looking real fine. The way the trajectory tracking is going, it does turn out that the NC2 burn is going to be just a little bit smaller than you've usually seen it in the - in the sims, but that's no problem. NC2 through TPI T_{ig}s are nominal and be very close to where you've been seeing them before. Because of the slightly smaller NC2 burn, when we get to NSR, it will have a little more of a radial component than you have normally been seeing, but that's no problem either. The ball angles will be very close to nominal, all the way in. One comment on the NSR burn. The - it could go either - either way, but it may be as small or at least small enough such - like the burn we did the other day when we had to load a different EMS number other than 13.0. We never really got to talk about that again, but in any case, the numbers that we passed to you to load in the EMS, even though they're lower than 7, are okay to load in there and the numbers

to trim to will be accurate. So I don't think there should be any problem in the rendezvous this morning.

11 14 33 ACDR Okay. Good.

CC-H Also, as you know, we've got a new team on here. We've been looking at what - what's been happening about the false alarms on the ISS during the evening. I've read this report - as to John Young's flight on Apollo 16 and I don't think we're missing any of the same indications, at least, that he had and that turned out to be false alarms; and as Crip told you awhile ago, assuming that they are false alarms, you won't get any interruption of programs you're doing.

ACDR Okay. That's good.

CC-H Okay. I guess that was about it on the rendezvous. On switch configurations, there's one thing we'd like to get done. We've got the secondary loop deactivated. There's one valve we would adjust to get us in a nominal configuration. On panel 377, we'd like the GLYCOL TO RADIATORS SECONDARY valve to BY PASS, and this will put us in a completely known configuration.

ACDR Okay. On 377, to BY PASS.

CC-H That's affirm, Tom.

11 15 46 CMP ... we have the VTR cooling implemented.

CC-H Okay. Real fine, Vance. Thanks for letting us know. Have you - did you do the P52? Could I get that data?

CMP Roger. Tom has it here.

CC-H Okay. I'm in no hurry, but whenever you get a chance.

11 16 30 DMP Okay. Okay. That's star 33 and 42, all balls; minus 15.6, minus 14.7, plus 60. Torqued at 46:36:15.

CC-H Okay, Deke. Thank you very much. Appreciate it.

DMP Sure.

11 17 07 ACDR Okay, Crip [sic]. Panel 377 is in BY PASS.

CC-H Okay, fine. Tom, thanks much.

CC-H And, Apollo, Houston. We notice you're still in FREE. Need to go back and make - reestablish the attitude. Go CMC AUTO.

11 17 44 ACDR You're there.

CC-H Okay.

11 19 04 ACDR Crip, have you got TV on there?

CC-H Tom, I don't - negative. We haven't started down-linking it yet. I'll let you know when we do.

ACDR Okay. We had a green light on, the one on panel 11. Yeah, we probably need to adjust the Polaroid on that, too - as of your directions.

CC-H Okay. As soon as we get a picture and I can talk you into it, we'll do it.

11 21 34 CMP I got both 181 and ... 808, Tom.

CC-H You were kind of garbled; say again, please.

11 24 41 CC-H Apollo, Houston. While we were in FREE there, we drifted a little out in pitch a little bit. We'd recommend going back to the previous nominal attitude that's in the Flight Plan at 45 hours, and probably it's still loaded so you can PRO through it in VERB 49. The attitude, if you don't have it, is 232, 04 - correction - 232, 034, and 000.

ACDR Okay. I got it, and we'll go back.

CC-H Okay. That's good, because this one is going to - it's okay now for comm, but it's going to be bad in a little while. Also, Tom, in about 5 minutes per the Flight Plan, we'll be turning on the down-link TV, and I'll let you know before we do that. And G&C has run the drift numbers from your P52, and, just another confidence factor, the drifts in IMU are so small, he can hardly see them.

Day 198

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Page 5

11 25 40 ACDR Sounds great.
CC-H Okay.

11 29 34 CC-H Apollo, Houston. In about 30 seconds, we're going to be turning on the TV downlink; and, incidentally, Tom, I've got an explanation of the green light.
ACDR Okay. Go ahead.
CC-H Okay. I guess I'll have to admit that I was a little bit confused on it, but the green light on a particular camera is on when two conditions are present. Number 1 is that that is the last camera or the camera that has been presently or last selected by the INCO, and number 2 is that the - that the ... CML or 2 - -

CC-H Apollo, Houston. How do you read?

11 32 11 CC-H Apollo, Houston. How do you read?
CC-H Apollo, Houston.
CC-H Apollo, Houston.

11 34 58 CC-H Apollo, Houston. How do you read?
ACDR Loud and clear.
CC-H Okay, Tom. What happened there was when we switched over to television, we did not - we had a weak signal strength, and also the audio was not on the TV side of the downlink. What we'd like you to do is verify that only one camera is in MASTER and the others are in SLAVE, and also verify the - that the INTERLEAVER and TELEMETRY POWER switches on panel 400 are ON.

11 36 27 ACDR Hey, Dick, before I head for the DM, which one do we want in MASTER? Both of them are in SLAVE here in the CSM.
CC-H Okay. We want the one plugged into CML as MASTER.

11 39 05 CC-H Apollo, Houston. The noise changed on the downlink. I just want to do a radio check with you.

USA Yeah. 5 by.

CC-H Apollo, Houston. How do you read?

USA ...

USA ...

USA ...

USA Okay, go ahead.

USA Go ahead.

11 42 14 CC-H Apollo, Houston. How do read?

CC-H Apollo, Houston.

ACDR Go ahead.

CC-H Tom, we dropped out there because for a minute we lost one of our voice lines. Could you verify that the - you've checked the two panel 400 switches and also that the 1 camera is now is MASTER and the other's SLAVE.

ACDR Roger. Panel 400 is squared away, and the one on CML that's in the tunnel here is on MASTER; all others are SLAVE and the DM closeout is in - taking place now.

CC-H Okay. Real fine, Tom. We're going to be switching back to the TV downlink mode and try that again; I'll be dropping out for about 30 seconds or so. I'll call you back.

ACDR All right.

11 44 04 CC-H And, Apollo, Houston. I'm told that I'm GO for voice again and I - we are getting a TV picture, and we probably can correct the Polaroid filter when you have time.

ACDR All right. Stand by.

CC-H Okay, Tom. Right now, it's a very dark picture.

CMP Okay. We'll rotate it, Dick, and let us know.

CC-H Okay. Why don't you give it a turn and then let us just look at it here for a second.

11 45 18 CC-H Apollo, Houston. I guess that direct - that direction on the Polaroid filter was okay, but we need to turn it some more.

ACDR How's that look?

ACDR Hang on, Dick. We're trying to get hatch 1 back up to the tunnel. We'll be jiggling the TV camera.

CC-H Okay, Tom. Understand you are messing with hatch 1. When you get back to that TV camera on panel 11, you might check the f-stop full open and that you're in AVERAGE. Because it is real dark.

11 50 51 ACDR Okay, Houston; Apollo. We've got hatch 1 closed locked and the PRESSURE EQUALIZATION valve CLOSED.

CC-H Okay, Tom. Thanks for letting us know. Back to that TV camera in panel 11, the - it's got a real dark picture. We'd like to check f-stop full open and AVERAGE.

ACDR Houston, are we over Russia now?

CC-H That's affirm. As a matter of fact, when we were - while you were messing with the hatch, we were - you just passed over the launch site. We saw a view of the Aral Sea and the coastline there. Reminded me of that airplane flight we took and that - now you're just about at the - about 52 degrees right at the highest point in latitude and west of the launch site over there by several hundred miles.

11 52 16 ACDR Okay. They got a forest fire on top of a mountain out here that you can sure see at this point.

CMP See some - a contrail, too.

CMP It looks like pretty rugged country - this part of the world right here - a lot of mountainous country.

CC-H Roger.

ACDR Dick, ... you're watching the TV out the window then?

CC-H Yeah. We had shifted to that - the window TV because the inside television was - the picture was so bad we weren't getting anything and - and INCO was just shifting back and forth while you were doing something else.

ACDR Rog. You have a pretty good picture on it - out the window?

11 53 06 CC-H We did on the out-the-window. We've - he's getting ready to get back to me here so we can adjust the inside one. Incidentally, I was telling you about the green light and I - I dropped out there. It turns out that the green light is on when the camera is selected and the power is on at the CML or 2 station which are - what - whichever one is appropriate. But it's - it's that - it could be on when we were not downlinking TV, which was confusing me. So - so the CAP COMM will just be extra diligent in letting you know when we are downlinking.

ACDR All righty.

ACDR Okay. How's your picture now?

CMP Okay. How - -

CC-H I'm sorry; you all said something at the same time.

CMP On the average, how's it look now? And we're giving you all the light we can - f-stopwise.

CC-h Okay. Stand by just a second, please.

11 54 32 CC-H Apollo, Houston. Without window shades, I think this is going to be about as good as we can get it. We can see a lot of light from the - from those two windows, which is making the view pretty poor, but just for your information, in this position, the - that camera should always be in AVERAGE with f-stop full open. Maybe if you could tilt it down just a little bit maybe and get the two windows out of the field of view -

CC-H Yeah. That's much better. When you get one of them out the - Tom, your window is still in the field of view a little bit.

11 55 10 ACDR Okay.

11 57 05 CC-H Apollo, Houston. We're 2 minutes from LOS ATS. Vanguard at 47; well, at - right at 48 hours. We'll see you down there.

DMP Okay, Crip. Or - whoever you are down there.

CC-H Roger. Whoever you are up there, Deke.

DMP Good comeback.

DMP We're in the middle of Constellation Orion here. We were so impressed we forgot what was going on.

CC-H Roger.

11 57 44 DMP Done.

END OF TAPE

Day 198

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

12 20 26 CC-H Apollo, Houston. Hello at the Vanguard for almost 7 minutes and I've got three pads sitting here for you. We are going to update the NC2 final pad. That's the first one, page 1-12 when you're ready to copy.

CMP Okay, ready to copy.

CC-H Okay. Starting with NOUN 28. There's very minor change in this one. 048:31 four balls; minus 025.0, plus four balls, plus four balls; 340, 047, 359; 012.0; 00:01. Go ahead.

CMP NC2 final pad readback. 048:31 all balls; minus 025.0, plus all balls, plus all balls; 340, 047, 359; 012.0, 00:01.

CC-H Okay. Good readback, Vance. Same page, I want to correct the high-gain angles a little bit. The pitch should be minus 30, minus 30; yaw of 154 - 154. When you get those, if you'll turn back and read me down the P52 data, I'd appreciate it, then we'll get the other pads.

12 22 16 DMP Roger. P52. Okay, stars 33 and 42; NOUN 05 was five balls; NOUN 93, plus four balls 5, minus three balls 19, plus four balls 6; torqued at 47:47:30.

CC-H Okay, Vance. I copied and while you're there, would you give me the data from the COAS line-of-sight determination on the right side there.

CMP Roger. Shaft 359.59; trunnion 57.448.

CC-H Okay, Vance. Copy. If you'll turn two pages over, on page 1-14, I've got an NCC preliminary pad.

CMP Ready to copy, Dick.

CC-H Okay. 049:15 four balls; plus 034.6, minus 005.0, plus 004.6; 179, 036, 352; 022.3, 00:02; weight 32096; trims plus 0.69, minus 0.52; star check: star 37; 269.8; 31.2. Go ahead.

DMP Roger. Readback, NCC preliminary pad. 049:15
all balls; plus 034.6, minus 005.0, plus 004.6; 179,
036, 352; 022.3, 00:02. Weight, 32096; pitch trim,
plus 0.69; yaw, minus 0.52; star check 37; 269.8;
31.2.

CC-H Okay. Good readback. Turn the page again and I'll
give you an NSR preliminary pad.

CMP Ready.

12 24 51 CC-H Okay. Starting with NOUN 81. Plus 012.5, minus
002.9, minus 011.4; 189, 296, 350; 005.9, 00:01;
0.6, 11.2. Weight, 31982; trims, plus 0.69, minus
0.52; burn attitude checks, star 04; 175.9; 23.7.
We've got a little over a minute until LOS. Go ahead
with the readback.

CMP Okay. NSR preliminary readback. Plus 012.5, minus
002.9, minus 011.4; 189, 296, 350; 005.9, 00:01;
0.6, 11.2. Weight, 31982; plus 6 - plus 0.69, minus
0.52, burn attitude, star 4; 175.9; 23.7.

CC-H Okay, Vance. You've got them all. They were good
readbacks. The - we're about 30 seconds from LOS.
The next acquisition is at the ATS, at about 48 plus
22. So we'll see you there. You'll also notice on
that NSR preliminary pad - that the delta-V_C tailoff
is 11.2. And that's what I was talking about earlier,
about being less than 13.

CMP Yeah, okay. Thank you.

12 26 48 CC-H Okay. Real fine.

12 42 53 CC-H Apollo, Houston through the satellite. How do you
read?

DMP Oh, 5 by. How do you read us, Dick?

CC-H Loud and clear, Deke.

DMP Okay.

12 45 12 CC-H Apollo, Houston.

ACDR Go ahead.

CC-H Tom, it looks to us - in looking at the CMC downlink that you've loaded your solution, and not the ground's solution, with regard to NOUN 81 delta-V's in the CMC, and we want to be sure and burn the ground solution. We can either go back through the prethrust program real fast and load the pad values, or talk about leaving some residual.

ACDR We'll go back and reload, even though we did it one time.

CC-H Okay. Why don't you go back through it again and check them and make sure that the delta-V's are loaded per the pad NOUN 81.

CMP Okay. We'll do P30. Okay?

CC-H Okay? Yes.

CC-H Yeah. And you'll reload P30 as you go through, if you need to.

12 46 31 CMP Okay, we got her in.

CC-H Okay, Vance. We're watching you as you go through the program.

CMP Okay, we're at attitude and ready.

CC-H Okay, Vance. Thanks a lot.

CMP Roger.

12 47 51 DMP Okay, they're all good.

12 48 50 CC-H Apollo, Houston. We are right with you, watching. The - the gimbal trim check looked real good to us.

ACDR Okay.

12 51 05 CMP Okay.

CMP Okay. Residuals plus four balls 10, and minus four balls 2.

CC-H Okay. Got it.

CMP Okay. It was a good burn. Burn jerked your TV camera around a little bit.

CC-H Okay.

CC-H And what was the delta- V_C after the trim, please?

CMP Minus 12.9; on time and on attitude.

CC-H Okay. Real fine. Thanks, Vance.

12 52 05 CMP Good.

12 55 14 CMP 8 - RECEIVE, 5, T/R, full decrease; AUDIO, 5, T/R, full decrease; AM OFF, BACKUP -

12 56 55 CMP (Soyuz, Apollo. How do you read?)

12 57 11 CMP (Soyuz, Apollo. How do you read?)

13 00 18 MCC-H CAP COMM, INCO, MOCR 2.

13 00 45 CMP Houston, Apollo.

CC-H Go ahead.

CMP Okay, Dick; we've got Soyuz in the sextant.

CC-H Hey, super. Have you got a good view of him, Vance?

CMP He's just a speck right now.

CC-H Okay. As you know, we're really - we and the Moscow Control Center and a lot of other people listening are sure interested in how this rendezvous goes and how the ... gets closer, so just keep us advised.

ACDR Okay.

CMP Right now he's hard to distinguish from the stars, except the stars are moving relative to the background and he is not.

CC-H Roger that.

13 02 40 CC-H Apollo, Houston. We can see you beginning to take marks here. I've got a couple of minor checklist changes in the Rendezvous Book. They're over on page 1-18 and 1-19. If anybody's got time here at this - while we're kind of quiet, I'd like to go ahead and get them in. Page 1-18.

ACDR Go ahead.

CC-H Okay. Tom, they're - let me explain them to you first. They're additions to the VTR/DAC switch list over there on the right-hand side of the page. And the reason we're putting them in is to - that Santiago pass is going to be very short, and we're not sure INCO can get in a command. So what we want to do is to add to the VTR/DAC switch list. On panel 181, we want the TV SELECT to go to CM, and we want the CML, CM2 switch to go to CM2. And then I've got another correction on page 1-19.

ACDR All right. On panel 181, TV SELECT to COMMAND MODULE and CML, CM2 switch to CM. Over.

CC-H Roger, Tom. That's correct, and on page 1-19, also on the right side of the page on the VTR/TV switch list, panel 181, we want both the TV SELECT switch and the CML switch to UP TELEMETRY, center.

ACDR Okay. How about hitting that again, Dick, please.

CC-H Okay. Panel 181, TV SELECT switch to UP TELEMETRY, center. And also the CML, CM2 switch to UP TELEMETRY, center. And that's to be done at - in the VTR/TV switch list.

ACDR Okay. Readback on panel 181. TV SELECT UP TELEMETRY center and CML, CM2 UP TELEMETRY center.

CC-H That's correct, Tom. Thanks a lot.

13 05 10 CC-H Incidentally, Tom, during that last transmission, there was a - there was a big squeal and ...

DMP Soyuz, Apollo. (How do you read me?)

SFE Very well. Hello, everybody.

DMP (Hello, Valeriy. How are you?)

DMP (Good day, Valeriy.)

SFE How are you? (Good day.)

DMP (Excellent.)

13 05 42 SFE ...

DMP (I'm very happy. Good morning.)

CC-H Apollo, Houston. Didn't mean to cut out Deke there, but we - there was a loud squeal when I talked to you, Tom, last. We want to make sure that that - your speaker box is off; probably feedback.

SCDR Apollo, Soyuz. How do you read me?

DMP (Alexey, I hear you excellently. How do you read me?)

SCDR I read you loud and clear.

DMP (Good.)

ACDR Okay, Houston. Go ahead; you said there was a loud squeal.

CC-H Yeah, Tom. When I was talking to you before Deke and Alexey started talking, there was a loud squeal, feed - feedback when you were talking; I'm assuming that might be because - that your speaker box is still on and it ought to be off.

ACDR Okay. We'll check and see.

CC-H Okay. Super.

13 06 38 ACDR No - -

CC-H Why don't - -

ACDR The one on the docking module might possibly be, but this one's off.

CC-H Okay, Tom, and I didn't hear the squeal that time so we'll go as is.

ACDR Yeah, the one in the DM is on. That's right. But it shouldn't bother us here.

CC-H Okay.

13 07 11 DMP (Soyuz, Apollo. Ready to connect to VHF AM.)

USSR Okay. We're ready, Deke.

DMP Okay. (Soyuz, Apollo. VHF AM. How do you read?)

USSR ...

DMP (Repeat, please. I didn't hear you.)

USSR ... reading you ...

13 07 46 DMP (Fine.)

ACDR (I am trying.)

13 09 20 CC-H Apollo, Houston. At about 45 seconds per the Flight Plan, we're going to go to a TV downlink mode through the ATS, and so I'll be dropping out in about 30 seconds. I'll give you a call when we're locked back up.

ACDR Roger.

DMP Okay, Dick. And we've got good comm with Soyuz on AM.

CC-H Roger, Deke.

13 13 35 CC-H Apollo, Houston. We've got the TV picture now, Tom. And we're go for voice. How do you read?

ACDR Roger. I read you loud and clear. How me, Dick?

CC-H We still have that squeal. I'm not sure where it's feeding back, but I am reading you but with a squeal in the background. Also, if you have the time, I think it would - and you wouldn't mind putting a shade over that left-hand side window, to your left, it would sure help the TV - yeah, that one.

ACDR Like that?

CC-H Yeah. If you could - a window shade over that window would improve the TV tremendously.

DMP You know, Dick? We left the speaker box on up in the DM. I don't know whether that may be giving us the problem or not.

CC-H Okay. I - I think the squeal is primarily coming when Tom transmits. When you transmit, it's - I'm not sure we're hearing any, Deke.

DMP Okay.

13 14 56 DMP (Soyuz, this is Apollo. We are ready to begin comm
check on VHF AM. Are you ready?)

DMP (Soyuz, this is Apollo. How do you read me on VHF AM?)

DMP (Soyuz, this is Apollo. How do you read?)

13 15 39 CC-H Apollo, Houston. One thing that you might check on
the switches, Tom, about the squeal that's coming out
of you, is the setup on panel 10. Make sure that the
INTERCOM and the S BAND are both full decrease, since
you're - you got an intertie to that panel.

ACDR Okay, checking. Both are decreased - -

CC-H Okay.

ACDR - - INTERCOM and S BAND.

CC-H Okay. Thanks, Tom.

ACDR Okay. Is there any squeal now?

CC-H It's - it sort of comes and goes. That time, I
didn't think it was very bad at all. At - in - in
any case, I can certainly hear you.

ACDR Okay. How do you read now, Houston?

CC-H I read that transmission loud and clear.

13 16 51 CC-H Apollo, Houston. I've got an NCC final pad when
you can copy, page 1-14.

ACDR All right, I'm ready to copy.

CC-H Okay, Tom. Starting with NOUN 11. 049:15:04.80;
plus 034.2, minus - -

ACDR Start all over, somebody was cutting us out.

CC-H Okay. I think they are. Stand by.

13 17 35 DMP (Excell - Good comm check on VHF FM.)

USSR I hear you loud and clear on VHF AM - -

DMP (... - -)

USSR - - I hear on VHF FM.

DMP (- - I will speak over VHF FM in 5 minutes.)

ACDR Houston. How do you read?

CC-H Apollo, Houston. Say again, please, Tom.

ACDR Okay. We were cut off by some interpret, some background line; go ahead and give me the whole pad again for NCC final, please.

CC-H Okay, Tom. I was waiting to see if we could find out where the problem was before I read it up to you. Maybe we could get clear comm, hang on just a second.

CC-H Tom, that interference is probably on VHF FM. On panel 9, if you'll turn down your FM volume to full decrease, you can probably - can get rid of it.

DMP Hey, Dick. It is ... turned mine off, and I still get it. It's not on AM either.

CC-H Okeydoke.

13 19 05 ACDR It's really bad, Dick.

CC-H Roger. Understand. Stand by.

ACDR Okay. It's cutting in and out. Try to get your transmissions in between it.

CC-H Okay. Let me go ahead and start again with NOUN 11. And I'll try to break it up. 049:15:04.80; plus 034.2, minus 004.3, plus 004.1; 179, 037, 353; 021.7, 00:02. Readback.

ACDR Roger. 049:15:04.80; plus 034.2, minus 004.3, plus 004.1; 179, 037, 353; 021.7, 00:02. Over.

CC-H Okay, Tom. Good readback. Turn the page. I've got a final NSR pad for you.

ACDR Go.

CC-H Okay. Starting with NOUN 81. Plus 013.0, minus 003.1, minus 013.6; 189, 299, 351; 006.1, 00:01; 0.80 - correction; delta-V_C tailoff 13.0. Go ahead.

ACDR Okay. Plus 013.0, minus 003.1, minus 013.6; 189,
299, 351; 006.1, 00:01; 13.0. Over.

CC-H Okay, Tom. Let me make sure - let me read you the
last two again - the delta- V_C at ignition is 0.8, and
the delta- V_C tailoff is 13.0. Did you read those back?

ACDR Roger. 0.8 and 13.0.

CC-F Okay, Tom. Good readback both pads. Thank you.

ACDR Houston, Apollo. I think what's happening is you're
getting feedback all the way through, back to Houston,
and back up on S-band. I've got AM and FM both off.

13 22 20 CC-H Roger, Tom. Thanks, and we'll continue to look at
it. When we figure it out, I'll get back to you.

ACDR Okay.

CC-H And, Apollo, Houston. We're going to be going out
the TV downlink mode, I'll be dropping out about
30 seconds. I'll call you back.

13 22 39 ACDR Roger.

13 23 28 DMP Okay. (Soyuz, this is Apollo. I'm ready for comm
check on VHF FM.)

USSR AM?

DMP (FM.)

USSR ...

FMP (Correct.)

DMP Okay. (Soyuz, this is Apollo. VHF FM. How do you
read?)

USSR Apollo, Soyuz. I read you 3 by 3 on VHF FM.

DMP (All right. I heard you 4 by 4.)

13 24 16 CC-H Apollo, Houston. We're back up on the air-to-ground.

ACDR Okay.

USSR ... VHF FM.

DMP (Alexey, I heard you poorly just now. Maybe we will be better in 5 minutes.)

USSR ...

13 26 19 ACDR (Soyuz, this is Apollo. I hear you excellently.)

USSR ...

ACDR (We, too. We hear you excellently on the VHF AM and we'll try on VHF FM.)

CC-H Apollo, Houston. We're going to ... and drop out about 30 seconds, I'll call you back.

CC-H Apollo, Houston. We're back up on the air-to-ground.

CMP Roger.

13 27 02 CC-H And, also, if anybody has a chance, on page 1-15, I've got an update of the high-gain angles.

ACDR Okay, go ahead, Dick.

CC-H Okay. Left side of the page, down at the bottom, pitch, minus 05; yaw, 314.

CMP And we've got good agreement taking the CMC solution.

CC-H Good show.

ACDR Okay. Pitch, minus 05; yaw, 314.

USSR Soyuz, Soyuz, Deke or Tom?

DMP (Good, Soyuz.)

13 30 01 CC-H Apollo, Houston. We're a couple of minutes from ATS LOS. ... drop out just a short time, and we'll call you at Guam.

ACDR Okay.

USSR (They're playing - too much. Good. They're playing ...)

13 31 50 ACDR Houston, Apollo. How do you read?

CC-H Loud and clear, Tom. We're close - about 30 seconds from LOS ATS. Go ahead.

Day 198

ACDR Okay. We're getting up to 3 minutes to the burn.
Recheck ... read me back through your S-band.

CC-H Okay. I copied that. We're not real sure, it's
probably some configuration problem we got, but we'll
find it.

13 32 17 ACDR All right.

13 35 17 CC-H Apollo, Houston. Guam for 6 minutes.

CMP/ACDR Roger, Dick.

DMP (Soyuz, this is Apollo.)

DMP (Soyuz, this is Apollo.)

DMP (Soyuz, this is Apollo.)

CC-H And, Apollo, Houston. When you guys get squared away,
stand by for burn status report.

CMP Roger.

DMP (Soyuz, this is Apollo. How do you read?)

13 36 52 ACDR Houston. How do you read?

CC-H Loud and clear, Tom.

ACDR Okay. Burn was on time. Burn status was - -

CMP Okay - -

ACDR - - minus 1, minus 1 - -

CMP Right. Minus four balls 1, minus four balls 1, minus
four balls 1. The EMS was set at 23.0 for G&N
solution and was turned out to 13.2 and it was on
time, on attitude.

CC-H Okay, Vance. Copy.

DMP (Soyuz, this is Apollo. How do you read?)

13 37 25 USSR Very well. How do you read me?

DMP (Very good, Valeriy. The MCC complete. Turn on your
ranging, please.)

DMP Okay. (Soyuz, this is Apollo. Ranging now established. 120 miles.)

USSR I read well. Range is 101 mile.

USSR 12 miles.

CMP (Valeriy, we've seen you through the sextant a long time ago.)

USSR Roger.

ACDR Okay, Dick. We locked on them on ranging at about 120.40 miles.

CC-H Okay, Tom. Thanks a lot for letting us know.

DMP (Soyuz, this is Apollo. Turn on your ranging. How do you read?)

USSR Say again, please. I did not understand you.

DMP (Yes. I'm talking about ranging. How do you read?)

DMP (Soyuz, Apollo. How do you read?)

USSR I read you badly. 3 by 3.

13 40 20 DMP (Roger. Understand.)

DMP (Talking on the ranging.)

CC-H Apollo, Houston. If someone is over - -

USSR ... RANGING, OFF.

CC-H - - close to panel 3, I'd like one switch thrown.

13 40 33 ACDR Go ahead, Houston.

CC-H On panel 3, I'd like the S BAND NORMAL POWER AMP switch to LOW.

ACDR Okay. You got it, Dick.

CC-H Okay, and we're about 30 seconds from LOS. I'll give you a call coming up at Santiago at 49:52. See you there.

DMP Okay. And we've completed all of our comm checks with Soyuz. The ranging isn't the greatest, but we're getting their ranging data.

13 40 57 CC-H Roger, Deke. Thanks.

MCC-H CAP COMM, INCO, MOCR 2.

END OF TAPE

Day 198

TAG Tape 198-06/T-24
Time: 198:13:45 to 198:15:15
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

14 12 30 CC-H Apollo, Houston. Standing by.

ACDR (Soyuz, this is Apollo. NSR completed.)

CMP Okay, Houston; this is Apollo. We just finished NSR. Residuals were all balls, plus all balls 1, minus all balls 1. EMS is reading minus 12.8; we shut it up on the G&N. And we burned the G&N ... solution; good attitude and on time. And we'd like to report that we could see Soyuz through the sextant shortly after NCC.

CC-H Okay, Vance. Would you read me the residuals again? I only copied two of them. If you'll give me those again, I'll have it all.

ACDR Roger. ATT, O; Y, minus 1; Z, plus 1. Over.

CC-H Okay, Tom. Thanks a lot.

CMP Okay. ...

CC-H Apollo, Houston for Tom, when - Apollo, Houston for Tom, when he has a chance.

ACDR Go ahead.

14 14 20 CC-H Okay, Tom. Talk about the RCS budget here for a minute. You're looking - we're right on the nominal; you've got plenty of gas. In case you do have any problems, remember the PSM goes empty when it's reading about 7 percent, and the redline on RCS for the quads is 35 percent.

ACDR Understand, Dick.

CC-H Roger. And, Vance, I cut you out. Go ahead.

CMP Roger. I don't know if you've been using the TV camera and station at 11 - at stage 11, but every time we make a burn, why it acts just like it suddenly is dropping to the floor. It turns sideways, and we have to reset it each time.

CC-H Roger, Vance. Understand.

14 15 22 DMP (Soyuz, this is Apollo. NSR completed.)
SCDR I don't understand you, Deke.
DMP (Maneuver NSR completed.)
SCDR NSR completed?
DMP Roger.
ACDR Houston, Apollo. Do you have any different angles for the ATS than what we - is in the Flight Plan?
CC-H Yes. The - the pitch is minus 05; yaw, 314. I read them up but maybe get - they got in another book. Minus 5 and 0 - and 314, Tom.
ACDR Okay.
DMP ..., Dick, and it's - and it's set up that way.
14 16 01 CC-H Okay. Super.
14 16 08 CMP (Alexey, ... 57.)
SCDR A range of 18 - 8 miles.
CC-H Apollo, Houston. We may have a short dropout between Santiago and ATS, but if we do, we'll see you on the ATS.
14 17 11 CC-H Apollo, Houston through the satellite. How do you read?
CMP 5 by, Dick.
CC-H Okay. Incidentally, on the comm, we have rechecked our configurations on the ground; they're all - they're correct now. If the problem of the comm interference happens again, one thing you might try is to turn OFF the PHONE MIC INTERCONNECT [sic] switch on panel 10 and see if that cuts it out; and let us - and then let us know about it. We'll continue to work the problem.
CMP Okay; we haven't heard it lately, Dick.

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TAG Tape 198-06/T-24
Page 3

CC-H Okay. I'm hoping we have it corrected.

14 19 42 MCC-H CAP COMM, INCO, MOCR 2.

14 29 01 CC-H Apollo, Houston. Per the Flight Plan, we're going to be switching over to TV mode, so I'll be dropping out for a few seconds. I'll call you back.

ACDR Okay.

CC-H Apollo, Houston through the satellite again. How do you read?

DMP 5 by, Dick.

CC-H Roger. And I had one question for Vance in regard to the NSR burn, if he happens to remember it. Vance, do you remember what you loaded prior to the burn in that EMS for delta-V?

CMP Stand by 1.

CC-H Okay. It's - it's not something that you were - that you normally would have written down in the Rendezvous Book. And if you don't remember it, don't worry about it.

CMP Little delta-V - -

ACDR Minus 13.

CMP - - minus 13; and it strikes us that it was 9.8, but I'm sure it was 9 something.

14 31 39 CC-H Okay. Copy. Thank you much.

CC-H Apollo, Houston. We've got television downlinking again. We still have a light problem. Looks like when we readjust the TV camera after the SPS burn, we may need to readjust the polarizing filter, and also, that hatch 3 window is drowning out a lot at the top. If you'd have time to put a cover over that, if you could stand to do that, we'd appreciate it.

ACDR Okay. Stand by. We're in the middle of a snack period now. We'll take a look. I don't want to

knock out too much light coming up for rendezvous from the overhead, but we'll take a look at it.

CC-H Okay; we don't either. You do what's necessary. Just thought we'd let you know what the picture looked like.

ACDR Okay. Side window doesn't hurt us a bit over here.

CC-H Okay.

14 35 34 DMP Besides the window, TV working down there, Dick?

14 35 39 CC-H Roger, Deke. I think what we're seeing is all ocean. Well, I guess we're seeing the African coast now coming up, and it does look good to me.

DMP Okay. It looks great from here. I didn't know whether you were seeing it that well or not.

CC-H Yeah, it just came into view. When you first asked me, all I was seeing was water, and I couldn't tell whether that was water or - or nothing.

DMP Okay; and I'll ... it over there a little bit.

CMP Marking is going real smooth, Dick. The computer seems to really know where we are.

CC-H Good show. I'm glad to hear that, and I've got a TPI preliminary pad when somebody can copy on page 1-17.

DMP Okay. Stand by a second.

CC-H Okay. Whenever you have a chance.

DMP Okay. Go ahead, Dick.

CC-H I'm sorry; you were cut out by somebody in here. Are you ready to copy?

DMP Roger. Ready to copy.

14 37 16 CC-H Okay. Starting with NOUN 37: 050:56:42.61; plus 19.4, plus 00.6, minus 10.3; plus 21.9/57, plus 00.6/04, minus 00.3/01; 008.9, 00:01; 359, 021, 000; 3.6,

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TAG Tape 198-06/T-24
Page 5

13.0. And let me correct one. I think I read the NOUN 22 yaw incorrectly. It should read 001. Why don't you go ahead and read that back?

DMP Okay. 050:56:42.61; plus 19.4, plus 00.6, minus 10.3; plus 21.9/57, plus 00.6/04, minus 00.3/01; 008.9, 00:01; 359. Okay; and I changed the next one. What's that, Tom?

ACDR Yeah, okay. That's 021, and that's 001; and 3.6. And ... 21.

CC-H Roger. That was a good readback. I didn't copy the last number, which should be 13.0.

DMP Rog. 13.0.

CC-H Okay; and the weight - -

DMP We're getting all that racket again, Dick, and we're missing some of your transmission.

14 39 29 CC-H Roger. I'm hearing it, too. The weight - I'll try to get in between it. The weight is 31914. And the trims: plus 0.62, minus 0.47. Go ahead.

DMP Okay. Weight is 31914; plus 0.62, minus 0.47.

CC-H Roger. And the docking attitude pad on the next page is nominal; no changes.

ACDR Hey, Dick?

CC-H Go ahead, Tom.

ACDR Hello, Houston.

USSR ...

ACDR Okay. Relay through Moscow to Soyuz that every time somebody comes on with a - a various transmission, our range is busting lock. Over.

14 40 12 CC-H Roger. We will do that. Thank you.

14 40 18 ACDR (Soyuz, this is Apollo.)

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CC-H Apollo, Houston. While it's quiet. It was obvious to us that during all the noise there, that what we were hearing here was some sort of VHF tower interference - some control coming across Europe. And, Apollo, Houston. Tom, if - I saw you trying to transmit. I didn't here that. I - I was watching TV.

14 42 18 CC-H Tom, Houston. How do you read? Okay, Tom, Houston. I can see that you are reading me, but you're not transmitting down. We'll look at the problem. I can - I can see you are reaching for the mike on the TV. I know you're hearing me, but I'm not hearing you, I understand.

ACDR Our VHF keeps breaking lock.

CC-H Roger. I understand, Tom.

ACDR Okay, Dick. We must have got out of the area there where all the transmissions - we could hear it both in French and English and a little bit of Russian. Our tracker - our VHF is locked on good now.

CC-H Okay. I hope it stays that way, and I read that transmission loud and clear from you.

ACDR Okay; and the - the docking attitude pad. Is that going to be nominal?

CC-H That's affirm. It is nominal.

ACDR Okay. I couldn't hear you when this other stuff came through.

14 44 52 CC-H Okay.

CC-M (Moscow, Soyuz. How do you read me?)

14 47 05 CC-H Apollo, Houston. We're going to delete the downlink TV and go back to the air-to-ground voice mode.

ACDR Okay.

SCDR Apollo, Soyuz. What is the range now?

ACDR (Right now, 48 miles.)

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TAG Tape 198-06/T-24
Page 7

SCDR 48 miles.

14 49 20 SFE Okay; I'm GO on docking; on time.

ACDR (Okay, Roger. I understand you. GO for docking.)

USSR ...

CC-H Apollo, Houston. When you have time to top - copy, Tom, I've got a final TPI pad.

ACDR Okay. Stand by. I'll be ...

CC-H Okay.

ACDR Okay. Go ahead. Ready to copy.

CC-H Okay. Starting with NOUN 37: 050:59:43.48; plus 18.7, plus 01.1, minus 11.9; plus 22.0/57, plus 01.2/08, minus 02.1/10; 009.2, 00:01; 358, 013, 002; 3.9, 13.0. Go ahead.

ACDR All right, on the readback: 050:59:43.48; plus 18.7, plus 01.1, minus 11.9; plus 22.0/57, plus 01.2/08, minus 02.1/10; 009.2, 00:01; 358, 013, 002; 3.9, 13.0. Over.

CC-H Roger, Tom. That was a good readback. And, Tom, Houston. Be advised we have confirmed for sure that the interference here you've been hearing is interference from ground station. That last voice that was interfering just a few minutes ago was interpreted, and it was a weather bulletin being - putting out. Must have been Moscow Metereo.

ACDR Okay. Thank you. The weather's pretty clear up here.

14 53 02 CC-H Roger.

14 55 56 CMP Hey, Dick, did you ...

CC-H That's affirm, Vance. We did.

CMP (Soyuz, this is Apollo.)

14 58 34 SCDR ... How do you read me?

ACDR (We read you well. Soyuz, this is Apollo. We now see your beacon. Some minutes ago.)

SCDR Soyuz beacon on.

ACDR (All right, I see it now.)

14 58 59 SCDR Thank you very much.

15 05 36 CC-H Apollo, Houston. Tom, when you get a second, like to just talk about the various solutions as they are coming up.

ACDR Okay. You saw our T_{ig} time: 50:56.

CC-H That's right, Tom. Just wanted to say a couple of words. We think you're doing real fine onboard. Both the T_{ig}s are slipping in the - the same direction. There is a difference between the pad T_{ig} and the - and your onboard T_{ig}. Another thing I wanted to say was if it did turn out that ours was correct, but you - because of the loading limits - you burned yours, the first midcourse could be in the area of X about 9 and Z about 15 feet per second; and - and we wouldn't be surprised at that. We don't think ours is right; we think your onboard T_{ig} is right, so we don't think you have any problem at all.

CMP Understand.

CC-H Okay, Vance. We still have about 3 minutes here until LOS. I'll just make this LOS call from ATS and give you a call when we come up at Santiago at 51:26. See you there.

CMP Righto.

CC-H Okay.

ACDR Do we still have contact, Dick? You can read that. It looks like we agree right on. At X, we're within, oh, a half - about 1 foot per second - no, a half a foot per second; Y, within a little over 1; and Z. So we're right on. The times are there. We're - we're home.

CC-H Roger. We're confident the way you are, Tom. Also, one thing before we go over the hill here. After we get ATS on this next pass and if this interference comes up and it's bothering you, let me let you know that it's not bothering me too much so don't worry about me. But if it's bothering you so much you - we think probably you could get rid of it onboard by - on panel 10, going PHONE/MIC INTERCONNECT [sic] to OFF, and then whoever's being bugged on their audio panel, turn his VHF FM and AM either OFF or VOLUME, full decrease.

ACDR Okay.

15 08 12 CC-H But I can put up with it; I - I'm - it's easy for me to get in and out between the interference.

END OF TAPE

Day 198

TAG Tape 198-07/T-25
Time: 198:15:15 to 198:16:45
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

15 18 58 ACDR (Soyuz, Apollo. How do you hear us?)
 DMP (Fine.)
 ACDR (We see you through ...)
 USSR I was just experimenting - Deke, listen to me.
15 45 35 CC-H Apollo, Houston through Santiago. How're you doing?
 ACDR 0.9 mile and have him wired. .
 CC-H Super, Tom.
 ACDR Midcourses were 0.2, 0.4, and the second one was a
 big one - like 0.6 and 0.8.
 CC-H Roger.
 DMP Okay, I've got it pretty well centered in my monitor,
 Dick.
 CC-H Okay, good. It's - this one is going on the VTR, we'll
 be picking it up real time shortly, here - over the ATS.
 DMP Okay.
15 46 19 ACDR Starting braking, Dick.
 CC-H Roger.
 ACDR Less than 20 feet per second.
 CC-H Apollo, Houston. I got two messages for you: Moscow
 is GO for docking; Houston is GO for docking; it's
 up to you guys. Have fun.
 ACDR All right, it sounds good. (Half a mile, Alexey.)
 SCDR Roger. 800 meters. What is this? 21. What is
 the range rate?
 ACDR (Very good, 80 seconds.)
 ACDR You can see his antennas from out here, Dick.

CMP Yeah.

CC-H Roger.

CMP (I see a green ship.)

USSR Thank you, Vance. Thank you, Vance.

15 47 34 ACDR Going to the second braking gate now.

CC-H Roger. And Houston is about 45 seconds from LOS at Santiago. We'll see you when you get locked up on the ATS.

ACDR (..)

16 00 08 ACDR Houston, how do you read?

CC-H Loud and clear, Tom. How me?

CC-H Apollo, Houston. How do you read?

ACDR Loud and clear. How you read?

CC-H Roger. Loud and clear, Tom. How're you doing?

ACDR Good. You should have a good TV picture.

CC-H Okay. We're going to be starting the TV downlink ... here shortly.

16 01 16 CC-H Apollo, Houston. Panel 230, need UP TELEMETRY switch to RELAY, if you haven't already done it.

DMP Stand by.

CC-H Okay.

16 02 00 CC-H Apollo, Houston. We've locked up on that data, now, we've looked at it, you're looking real good. We're going to switch over to the TV mode.

DMP ...

16 03 01 CC-H Apollo, Houston. We're - we do have the TV now out the right-hand window, we can see the docking module and the Earth horizon.

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ACDR Can you see the Soyuz?

CC-H (No.)

DMP Okay, he's in behind the docking module and - -

CC-H Ah-hah! Here he comes - just above the docking module. Looks real pretty.

16 03 31 DMP And, Dick, we have two lights, SM RCS B and D. I think it's temperatures, no sweat.

CC-H That's affirm, Vance.

16 04 40 ACDR (Soyuz, please tell us when you begin your maneuver.)

ACDR (Soyuz, this is Apollo. How do you read?)

SFE I read you 5 by 5.

ACDR (Yes, please tell us when you begin your maneuvering.)

06 05 09 SFE We're initiating rotation maneuver. You see?

ACDR (Yes, very slowly.)

16 05 20 SFE Inertial orientation initiated.

ACDR (Roger.)

16 05 26 SCDR Soyuz docking system is ready.

ACDR (We are also ready, Apollo is ready.)

16 06 43 SFE Tom, I see your spacecraft.

ACDR (Yes.)

USA (We see it. It's very beautiful. We see your periscope.)

SFE It's a good picture.

16 07 12 CC-H Apollo, Houston. As far as our TV picture goes, it's been real good. It is - as you maneuver around and the sunlight varies on the two spacecraft, it does very bright. If you're in AVERAGE, SLAVE, and LINEAR - -

16 07 25 SFE Tom, roll maneuver is completed.

CC-H - - you want to stay there.

ACDR (Roger.)

SCDR Inertial orientation established.

ACDR ... SLAVE ...

CC-H Good show. Just stay there. Looking fine.

ACDR (I'm approaching Soyuz.)

SFE Come in, Tom?

SFE Tom, please don't forget about your engine.

ACDR (Laughter.)

16 08 15 SCDR Inform us about range rate.

ACDR (Very good. One-half meter.)

16 08 40 ACDR (Less than 5 meters distance.)

CC-H Deke, Houston. Deke, Houston. Can you close down the f-stop some?

ACDR (3 meters.)

ACDR (1 meter.)

16 09 09 ACDR (Contact.)

16 09 10 SCDR We have capture.

16 09 11 ACDR (We also have capture. We have succeeded. Everything is excellent.)

16 09 27 SCDR Okay, Soyuz and Apollo are shaking hands now.

ACDR (We agree.)

CC-H Apollo, Houston. Deke, when you have a chance, we'd like to close down the f-stop. We do have a good picture, but it's too bright.

CC-H Right there, Deke.

DMP Is that okay, Dick?

CC-H Deke, it got a little bit better. It's still a little bit too bright. While you were fooling around with it, though, we did get a good picture when you were closed down a little more than you are now. And we've got all the events. We're following you on the ground. You're looking real good. We copied Alexey saying you're holding hands, and we see it, too.

16 10 53 SFE ... Moscow, this is Soyuz. How do you read me? Over.

CMP (Soyuz, this is Apollo. Initiating the retraction.)

SCDR Okay. Roger.

ACDR Houston, Apollo.

CC-H Go ahead, Tom.

ACDR (Tell Professor Bushuyev it was a soft docking.)
It was a soft docking.

CC-H Roger, Tom. We'll pass it on.

USSR ... ready to mate.

USSR ...

16 12 16 ACDR Heard your hatch close.

16 12 18 CMP (Active latches are closed.)

SCDR Perfect.. Seal compressed.

16 12 24 CMP (The docking is finished.)

16 13 26 ACDR Docking is completed, Dick. Docking is completed, Houston.

SCDR Roger. (Moscow, Moscow. How do you read? Over.)

SCDR Well done, Tom. It was a good show. We're looking forward now to shaking hands with you on - in board Soyuz.

ACDR (Thank you, Alexey. Thank you very much to you and Valeriy.)

SCDR ...

16 14 09 CC-H Apollo, Houston. For Deke. Deke, on that TV camera, we'd like you to go to PEAK, please.

DMP Okay. We'll try her.

CC-H Okay.

SCDR (Moscow, Moscow, Soyuz. How do you read me? Over.)

CC-M (I read you well. Was docking achieved?)

ACDR (Soyuz, Apollo. We are beginning ...)

SCDR (Okay. Let's go.)

16 16 11 CC-H Apollo, Houston. I'd like to check two switches on panel 181. We'd like the TV SELECT and the CML - the CM2 switch - both of them to UP TELEMETRY. That's the center position.

ACDR Say again, Dick.

CC-H Okay. Panel 181, TV SELECT and CML, CM2 to the center position: UP TELEMETRY.

ACDR Roger. Understand. CML ...

USSR ...

16 16 55 ACDR Okay, Dick. We're turning off the VHF on panel 10.

CC-H Okay.

ACDR Okay. Now we can - Okay.

CMP ...

CC-H Okay. Now, Tom, if you can hear me. I think you copied that. Panel 181, TV SELECT and CML/CM2 to UP TELEMETRY. That's the center position.

ACDR Roger.

CC-H Okay.

CMP (Soyuz, this is Apollo. Turn off power of the docking system. Soyuz, this is Apollo. Soyuz, this is Apollo.)

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ACDR (Soyuz, this is Apollo. How do you read?)

16 18 26 CMP (Very good. Docking system power off.)

ACDR (Soyuz, this is Apollo. Docking system power off.
Soyuz, this is Apollo. Now the docking system power
is off. Over.)

CMP ... ground ...

ACDR ... configured your VHF to ...

CMP Houston, Apollo.

CC-H Apollo, Houston. Go ahead, Vance.

CMP Dick, we have P25 up, and we can reset the VHF ranging
anytime you want.

CC-H Okay. Thanks for letting us know.

ACDR Oh, you want her - oh, okay. You better hurry up and
do that. I just turned off the range ... way ahead of
you here. Better get back into configuration.

CMP Yeah, the ground has to watch that.

ACDR Okay. Let's see, where the heck were we?

CMP Probably about all it takes is -

ACDR This alinement is beautiful. ... came in. This line
across here is just splitting the screw in the center
of his target.

CMP Great. Mind if I take a look?

ACDR Have at it. It's awful ... look at it, you can see it.

CMP ... Boy, it's alined perfectly, huh?

ACDR Oh, shoot, you couldn't do it any better.

16 20 50 CC-H Apollo, Houston. You'll be able to terminate the P25
at 52 plus 05. I will call you back and remind you of
that and, also, if you get a chance, the polarizing
filter on the camera in slot number 11 is - needs some
rotation; that light is blanking it out. Thanks, Vance.

ACDR Dick, as far as interesting PRO alinements, the center of my COAS is splitting the exact center of a bolt that's holding on his target - on the center of his target.

CC-H Great. Sounds good.

16 22 56 CC-H Apollo, Houston. Be advised you're pretty close to coming across - over the Soviet launch site. We're past the places that we got the previous comm interference; you might want to try reconfiguring the comm and that would get us back to the RELAY.

ACDR You got it.

CC-H Okay. And if it's a problem to you, Tom, go back as you need to.

ACDR Okay.

16 25 05 CC-H Apollo, Houston. It's 52 plus 05, and, Vance, you can terminate the VHF bias check. Thanks much.

CMP Okay. You bet.

16 27 07 CC-H Apollo, Houston. We had a real good TV picture, Vance, when we went into the Earth's shadow there. It looks like it got darker, so you might open up that camera a little bit. And you did a real fine job on that polarizing filter. That worked real well.

CMP Okay.

ACDR And, Dick, I'd estimate my final closing velocity between 0.3 and 0.4 of a foot per second - on contact.

CC-H Okay, Tom. I copy. It sure looked good down here, dead center.

ACDR Why don't you - -

DMP ...

ACDR Houston, Apollo.

CC-H Apollo, Houston. Go ahead, Tom.

16 30 50 ACDR Okay. Deke smells something pretty bad up in the docking module. ...

DMP ... up there and close it.

ACDR We're going on - on the oxygen masks right now. And we're going to close that hatch. We don't know what it is yet.

CC-H Roger. And could you describe what the problem is?

ACDR ... but we can smell it. It - it smells like - it's kind of weird. It smells something like cordite. I can't tell. But it might be like the flight glue or something like that.

CC-H Okay. About all I copied, because of the voice and the mask, Tom, is that it - it is a very bad odor.

ACDR Yeah.

ACDR We got good partial pressure in the module. O₂ is 200 millimeters.

16 31 53 CC-H Okay. And the one thing that was garbled, Tom, was your description of the smell, and that would help us a lot. Was it a burning smell or can you relate it to anything?

ACDR Yes. It was a burning smell. It smells something like burnt glue.

CC-H Burnt glue or something like that. Okay.

ACDR Yeah. Yeah, or it could smell something like acetate.

CC-H Okay. Copy.

ACDR It smells like acetate.

CC-H Roger. Understand, Tom.

CMP But - I think we noticed - I've smelled that in new vehicles before.

CC-H I'm sorry, Vance, we dropped out.

ACDR But it's really strong.

16 32 31 CC-H Okay. I dropped out when Vance said it - you say that you think you have smelled the odor before or not?

CMP Yeah. We - the thing to sort out right now is if we smell the same thing that we all smelled just slightly in the vehicle a couple of days ago. You may remember sometime being around spacecraft in a plant smelling the glue. Perhaps the same sort of thing that they used to put on Velcro.

CC-H Roger. Understand. And are all three of you guys back in the command module now with the hatch - hatch shut or not?

DMP Not yet.

ACDR No, the hatch isn't shut yet. We're just going to stay here for a minute. We've got the masks standing by so we can put them on. No sweat.

16 33 21 CC-H Okay. Fine, Tom. We still have 15 minutes of voice here through the ATS, so please keep us posted.

ACDR Sure will.

ACDR And - and it does have a tendency to burn your eyes.

CC-H Roger. Copy.

ACDR Okay. We're going to go ahead and close hatch 2, and we can vent the module down and ... work with it.

16 34 15 CC-H Tom, Houston. One thing we think - one thing that we think, just for precaution that would be a good idea, is that at least one of you guys go ahead and put a mask on.

ACDR Okay. Well, I've got it. Vance and I have got it right by our face here, so there's no sweat. We've got - you can see it.

CC-H And, Apollo, Houston. The TV cameras are getting kind of warm. We've stopped the downlink of the TV on panel 181. We'd like to get CM 1 and CM 2 POWERS to OFF.

ACDR Roger. Got it coming in work now.

CC-H Okay, Tom. Thank you.

SCDR Tom, ... pressure integrity check is okay.

ACDR (Roger. I understood you.)

USA ...

USA I don't know.

16 35 24 ACDR Okay, Dick. It looks like it may be - may be dissipating a little bit. We first noticed it when Deke opened the hatch and went up in there.

CC-H Okay. Fine. We're talking about it, but the best information is coming from you so just keep us posted.

ACDR Okay. It seems to have dissipated quite a bit after the initial jolt of the stuff, and we're going to start that CM/DM atmosphere mixing and see what happens here.

16 36 04 CC-H Okay, Tom. Stand by on that just a second, please.

CC-H Apollo, Houston. Tom, one comment we'd like to make to you that it may very well not be a good indication to - that the fact that the smell seems to be going away because you just might be getting used to it as you stay longer. We'd like you to hold up on the CM/DM atmospheric mixing from now, and let us think about it a little more and just continue on through the other parts of the checklist and please keep us advised.

DMP Okay. Understand, Dick.

CC-H Okay.

16 37 58 DMP I'm back up here again, and the partial O_2 is a little over 200. Our total pressure is up about 260; and CO_2 is about 4.7. So everything's looking pretty good right now.

CC-H Roger, Deke. I copied that on the ground.

DMP I'm just kind of standing by here to see if I feel any different and I'm feeling pretty good.

CC-H Understand.

MCC-H What did he say?

CC-H He read us a PPO₂ is better than 200. Total pressure ...60. CO₂ ... 7, so he thinks his systems are in good shape.

DMP I'm not used to sniffing glue. Maybe that's what it is.

CC-H Roger, Deke.

MCC-H ... why they They detected a slight odor, which was the first I heard ...

MCC-H Okay, ...

MCC-H I'm pressing on here and getting the mixing going so that ... CO₂ ...

MCC-H Okay, CAP COMM Let's get Vance on the mask since it's ... EECOM was saying the situation was caused by.

MCC-H ...

MCC-H Go ahead, ...

MCC-H Yeah, my understanding is when we put - pulled those furnace ... earlier today and put them ... and put ...

16 41 33 SCDR Hello, Valeriy and me just now in orbital module.

CC-H Apollo, Houston.

ACDR Go ahead, Dick.

CC-H Okay. Here's what we'd suggest doing. We still got - got about 6 minutes left in this pass. First of all, we don't see anything wrong. Matter of fact, we see a benefit to continuing on and - and doing the CM/DM mixing. We would suggest that Vance, since we think, looking at the checklist, it'd probably be the least inconvenience to him, would go ahead and put on the mask until we sort the whole thing out. Also, one thought is that the furnace sample that we took out his morning was rather warm when it was placed into D-1. There is some Velcro in there that with glue, as you know, it might be that - that might be a location of the smell. In any case, we think you ought to go ahead and start the CM/DM mixing and press on.

ACDR Houston, that sample wasn't removed this morning.

ACDR Remember we held off on removing it.

16 42 58 CC-H Okay. Roger. We can get straightened out on that here in a few minutes, and at least we'd suggest Vance get on the mask and do the CM/DM mixing.

ACDR Okay, I'm still in the CM, Dick, and I'm feeling okay now, no problem. And I don't know where our checklist let us down here, but the sample is still in the furnace. The furnace feels cold, however.

CC-H Okay. If you'll give me a few minutes here at one of these upcoming passes, we'll straighten that out. We're not worried about it at the moment. One other thing, Tom, is you might let Alexey know what's going on in Apollo. I'm sure he'd be interested. We have informed Moscow Control Center.

ACDR All right.

16 44 14 ACDR (Soyuz, this is Apollo. Now we have some - a little problem. I think we have somewhat of a bad atmosphere here. I think soon that we will no longer have any problems.)

SCDR Okay.

END OF TAPE

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TAG Tape 198-08/T-26

Time: 198:16:45 to 198:18:15

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ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

16 45 31 CC-H Apollo, Houston. A couple of things. One is, we're picking up a big squeal. We think it's probably the speaker box in the DM. If we could turn that off, it would probably help the comm a lot. Also, on panel 230, we'd like the UP TELEMETRY switch to UP TELEMETRY, that's center.

ACDR Okay. That's in work.

16 45 54 ACDR The speaker box is off.

CC-H Okay. And Tom - -

ACDR And Vance is on the O₂ mask.

CC-H Okay. Real fine. Thanks a lot, Tom. We heard you inform Alexey and we appreciate it. We think, probably, the most likely explanation is - is that we've had the docking module closed up for 4-1/2 hours and the smell has just built up a little bit. We don't anticipate a big problem at all. We are about 2 minutes from ATS LOS, and I'll give you a call at Orroral Valley after just a couple of minute drop-out.

ACDR Okay.

DMP Okay. Dick, let me give you some quick readings here while I got you.

CC-H Okay. I'm ready to copy, Deke.

DMP Pressure latch system A, number 1 is 5.1. Number 3 is 5.1. Number 5 is 5.1. Number 7 is 5.1. System B, number 2 is 5.1. Number 4 is the same. Number 6 is the same. And so is 8.

CC-H Okay. Let me check them again, Deke. All of the system B meters were 5.1. Is that right?

DMP Everything is 5.1, Dick. Basically ...

CC-H Okay. Good show. Thanks, Deke.

DMP Roger.

16 47 25 DMP Have you got the predock readings down there so you can do your own subtraction? We'll do ours up here later.

CC-H Yep. Sure do.

USSR ... Soyuz ...

USA (Soyuz, this is Apollo.)

USA (Soyuz, this is Apollo.)

USSR Go ahead.

SCDR (Alexey, turn on your dual VHF simplex, please.)

SFE ... simplex ... simplex on.

16 48 12 SCDR (Thank you, Valeriy.)

16 50 12 CC-H Apollo, Houston. We're AOS Orroral Valley for 6 minutes and if you'll give us ACCEPT, we'll start uplinking the high-gain EMP.

USSR (Moscow, Soyuz. I read you excellently.)

CC-H Apollo, Houston. On panel 230 we need the UP TELEMETRY switch to DIRECT.

USSR (The result of the TV tube check is excellent. Right now, we ... in 7 minutes will check exactly instructions. Right now the pressure is ... millimeters.

CC-H Apollo, Houston. How do you read?

DMP Well, you got us here. We've got the TVs activated in the DM, and I guess you're supposed to tell us if you don't like where they're pointing.

CC-H Understand, Deke. You got the TV activated in the DM. I didn't copy the last.

16 52 17 DMP Both of them are up and running, but I'm supposed to position them per your directions.

CC-H Roger. And we'll get back to you. We are not downlinking TV here, Deke.

CC-H And, Apollo, Houston. How are you reading me?

CC-H Apollo, Houston. Per the Flight Plan, we would like to go ahead and commence the battery Alfa charge.

USA Roger.

16 53 40 CC-H And, Apollo - Apollo, Houston. One thing I did want to pass up to you at this pass, I'd like to correct my last - that was - early comment to you. After talking to the Surgeons, we feel that the - -

SCDR (Moscow, Soyuz. We hear you excellently.)

CC-H - - that the smell, as you - as the smell changes to your senses, we think that is a very good indicator of how you're doing, and before - we've got about 2-1/2 minutes before LOS. We would - we'd like - we'd just like to know how you're coming along with the odor problem prior to LOS here at Orroral Valley.

DMP Okay. I've been in the DM all the time here, Dick, and I got both TVs; you can look and see if anybody's interested but I'm feeling fine right now and the smell is strongest towards hatch number 3 and - but it's not bad anymore. It's not bothering me any at the present time.

CC-H Okay, Deke. It sounds real good. We're - we're not - incidentally, the business on the TV - the way the Flight Plan was written, we would have had TV toward the end of the ATS pass, but we got a little slowed down on the odor problem. So we'll catch up the pointing a little bit later.

16 54 58 DMP Okay. I'll just set them up - best I can and you get them later.

CC-H Okay. Real fine.

DMP Okay.

16 55 06 CC-H And, Apollo, Houston. We're 1 minute from LOS Orroral Valley. We'll see you at Quito at 53:01, and we'll be starting to uplink the high-gain EMP there at Quito.

17 22 08 CC-H Apollo, Houston, through Quito for 5 minutes.

CC-H Apollo, Houston, through Quito for 4 minutes.

DMP We read you 5 by.

DMP Just getting started on page 2-5 in the DM checklist.

CC-H Roger, Deke. We read that you're on page 2-5 of the DM checklist.

DMP Yeah. I'm getting started on the top of that page.

17 23 45 CC-H Understand.

DMP We've gotten ourselves all confused here on what's going on with the furnace at this stage. We ... the sample we put it originally *** it appears that somewhere along the line we should have had an update, or maybe got one and missed it, to take the sample out. But the fact is, the first sample we got in there is still there. I did the helium injection per procedure, and I'm assuming that that sample will come out, when we put the ***

17 24 44 CC-H Apollo, Houston. How do you read us now?

DMP Read you 5 by, Bo.

CC-H Roger, Deke. We understood that you are in the DM starting on page 2-5 at the top, and you had done the procedure and the helium injection - -

SCDR (Tom, what about your problem?)

ACDR (...)

CC-H But - we - you were cut off because of bad communication, with the rest of your question about the sample.

DMP Okay. The sample that's in the furnace at the present is the sample that was put in originally. It's the only one that's ever been in it. It appears, somewhere along the line, we may have should have taken that out of there, but he never did. And that was in our Flight Plan. We had a lot to do related to the furnace, and we must have missed that. So what I'm assuming we should do is take that sample out and then ... put the Soyuz sample in. Is that correct?

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CC-H We'll check on that for you, Deke.

17 25 39 DMP Normally that would have been sample SC001 coming out ... We never put that sample in.

CC-H Understand.

CC-H Apollo, Houston. Over.

DMP Go ahead, Bo.

CC-H Apollo, Houston. We would like you to take out that sample, and when the Flight Plan calls for the placement of the Soviet sample into the furnace, we'd like you to do that then.

DMP Okay. We're cut out but understand we should take out the 041 at the time we put the Soviet sample in.

17 26 55 CC-H Apollo, Houston. We're about 30 seconds from LOS and we'll see you at MILA at - 50 - -

DMP Okay. You cut out on us, Houston.

17 27 12 CC-H We'll see you at - at Bermuda at 53:11.

17 27 16 DMP Understand. Bermuda at 53:11.

17 30 29 CC-H Apollo, Houston through Bermuda for a few seconds, and then we'll be going ATS. Over.

DMP Okay, Bo. Read you 5 by.

CC-H Roger. And - in the command module, we would like on panel 181, the COMMAND MODULE cameras 1 and 2 TV POWER to ON.

17 30 52 ACDR Stand by.

CC-H Command module pilot, Houston. Do you read?

CMP Roger. Not in a position to do that, because of - we're kind of crowded in here. It'll be just a moment, though, and we'll do that for you. Understand - POWER for cameras 1 and 2, ON.

CC-H Roger. And on panel 230, we'd like to - you to verify that the UP TELEMETRY switch is in the center, UP TELEMETRY, position.

CMP Stand by.

USSR (Apollo, Soyuz. I hear you excellently. Over.)

17 32 02 CC-H And, Vance, if you have a chance, we'd like the computer in ACCEPT.

USSR (Repeat. Over.)

CMP Okay, Bo. Stand by 1.

17 32 12 CMP Okay, we put the switch UP TELEMETRY in the center position for you. It was not there before.

USSR (Moscow, Soyuz. I didn't get you; repeat. Over.)

CMP And, believe it or not, I can't quite reach the UP TELEMETRY switch, now. Stand by 1.

CC-H Say that again, Vance, please.

CMP We're ... just a second.

17 32 54 CMP Okay. Panel 2 UP TELEMETRY switch coming on.

17 33 14 USSR (Second parameter on form 3, right?)

CMP Okay. UP TELEMETRY switch to UP TELEMETRY now.

CC-H Roger. Thank you.

USSR (The results of the precise check are very good.)

USSR (The tunnel 2 pressure dropped 1 millimeter in 10 minutes. This is very excellent. Over.)

SFE (Moscow, this Soyuz 2.)

USSR (... 275.)

CC-H Apollo, Houston. We're standing by for ATS acquisition.

ACDR Okay, Bo.

CC-H Apollo, Houston through ATS. How do you read?
Apollo, Houston through ATS. How do you read?

DMP Houston, Apollo. How do you read?

CC-H Deke, we read you well.

CC-H How do you read us?

CC-H Apollo, Houston through ATS. How do you read?

CC-H Apollo, Houston. We cannot understand you ...

CC-H Apollo, Houston through Madrid. How do you read?

CC-H Apollo, Houston through Madrid. How do you read?

CC-H Apollo, Houston.

DMP Houston, Apollo.

CC-H Apollo, Houston.

CC-H Apollo, Houston. We heard you once about 30 seconds ago; how do you read us?

USSR (...)

CC-H Apollo, Houston through Madrid. How do you read us?

CMP Houston, Apollo. How do you read now?

CC-H Roger. We read you now, well.

CMP Houston, Apollo. How do you read?

CC-H Apollo, Houston. We read you. Could you tell us what your comm problems are?

17 46 50 CC-H Apollo, Houston. We seem to be getting data. Perhaps we can also speak. How do you read?

CMP Houston, Apollo. How do you read?

CC-H Apollo, Houston. We seemed to read you okay that time. How do you read us?

CMP Loud and clear. We've had a whale of a time locking on, Bo, and we've had a lot of background noise from ground frequencies; so, we're locked on and we turned off VHF FM again.

CC-H Roger. Thank you.

17 47 52 DMP Okay, Bo, if you're reading, we've about completed step 7 here - -

CC-H Understand. You've completed step 7 in the Docking Module Checklist.

DMP Yeah. We got one problem here. We don't know where the ZFF sample is that's supposed to be in the DSP to go to the Soyuz.

CC-H Deke, would you say that again, please. You were cut out.

17 48 24 DMP Yeah, we're supposed to transfer a ZFF to the Soyuz; number 1A or AS-1. We don't know where that thing is.

CC-H Roger. I'll check with FAO.

DMP Thank you.

CC-H Apollo-Soyuz [sic]. The REFSMMAT is not onboard yet, and so we request you to not do the P52 yet.

CMP Understand.

17 49 11 CC-H Command module, Houston. Over.

CMP Houston, command module. Roger. I understood and I'm holding on.

CC-H Roger. And we know you were busy before, and we'd like to check if you had a capability to turn that CM 1 and 2 TV POWERS, ON?

CMP Okay. I think somebody did it for me, but let me go down and recheck.

CMP Okay, Bo. They should be on now.

CC-H Roger. And on *** POWER AMP HIGH/LOW switch to OFF; that's center.

CMP Please repeat. You were cut out by the ground station.

17 50 26 CC-H Roger. That is the - on panel 3, S-BAND NORMAL POWER AMP HIGH/LOW switch to OFF, center.

17 50 35 CMP Roger.

17 52 54 CC-H Docking module pilot, Houston.

DMP Go ahead, Bo.

CC-H We have a good picture of you, Deke, and an answer to your question is that the D - ZFF photos should either be on the bulkhead right of the optics, where they're positioned for the photos, or you'll find them in R-5.

DMP Okay. We've got two up there on the bulkhead that we're - we've been running with. Are we supposed to transfer one of those to Soyuz?

CC-H Roger. One of those is supposed to go to Soyuz.

DMP Okay. Well, there wasn't any label on them, so we weren't sure - just - either one of them, huh?

CC-H Roger. Either one.

DMP Okay, fine.

17 56 49 CC-H Command module, Houston. We would like you to go to ACCEPT so we can load the REFSMMAT.

17 57 03 CMP You've got it.

CC-H Thank you.

CC-H Apollo, Houston. We have the REFSMMAT in. You can go back to BLOCK and do the P52.

CMP Roger, Bo.

CC-H Roger, Vance.

17 59 53 CC-H Apollo, Houston. On that MASTER ALARM, we're looking at an O₂ tank pressure that is low.

CMP Roger. O₂ tank pressure.

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18 00 30 CMP Yeah, Bo. We have a - an indication of a full scale low on number 2.

CC-H Roger. We agree.

CMP And, Houston. We have VHF FM back on again, not that we've passed the noisy area.

CC-H Roger. I understand. You put the VHF AM back on.

CC-H Apollo, Houston. The O₂ tank pressure now agrees with tank number 1, and so the transducer is working again.

CMP Now, that's interesting, isn't it.

CC-H Roger.

18 02 54 CC-H Command module, Houston. We're going to dump data so we'll have voice loss here for a few seconds.

USA Understand.

CC-H Command module, Houston. Over.

CMP Rog, Bo. We're delaying the P52 a little bit here, until we get squared away a little better ...

CC-H Roger. Understand. You're delaying the P52 a bit, and we would like you to check the SM RCS engine package heaters and verify that they're all on up into the number 1.

CMP About the time of docking, I turned them all off, because we were getting lights on all quads and reported the lights; turned them off, so we'll get them back on for you.

18 05 11 CC-H Roger. Understand you turned them off about the time of docking.

CMP Roger. Temp was going up above 200 on all of them at that time.

USA ... you're secure at the computer, and we can go to BLOCK.

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18 05 44 CC-H Roger. You're clear to go to BLOCK.

CC-H And command module, Houston. For your information. We have not had a chance to get the high-gain EMP into the computer yet.

CMP Rog. Understand.

USSR (Are you supposed to have pressure integrity control on?)

USSR (What for?)

USSR (Is your pressure control valve open? Check with documentation.) (Is your ... on?)

18 08 31 ACDR Bo, we just had a MASTER ALARM for the CRYO PRESSURE.

CC-H Roger. Tom, understand. CRYO PRESSURE, MASTER ALARM.

18 08 54 ACDR Have you got telemetry, Bo?

CC-H Negative. We have playback data right now.

ACDR Okay, it went on about 53:48:30.

CC-H Understand 53:48:30 for that time of alarm.

ACDR Yeah, about 45 seconds ago.

CC-H Roger.

18 09 43 CMP Houston, Apollo. If you're watching our computer, we're just finishing a P52 option 3.

CC-H Vance, we're having playback data right now, so we're not seeing your P52.

CMP Rog.

18 10 52 ACDR Bo, do you want me to read the data to you on the P52?

CC-H Roger. Please do. We only are receiving playback data.

ACDR Okay. Star 35, number 1; 37, number 2; NOUN 05,
four balls 1; 93, plus 50, minus 20, minus 7;
torqued, 53 plus 50 plus 35. Over.

CC-H Understand. Stars 35 and 37, four balls 1; plus 50,
minus 20, minus 7; 53:50:35. Thank you.

ACDR Roger.

CMP And we're ready to proceed with the option 1 and
we'll report that.

18 11 46 CC-H Roger.

END OF TAPE

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TAG Tape 198-09/T-27
Time: 198:18:15 to 198:18:40
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ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

18 15 25 ACDR ... Bo, do you want to copy on the - on the option 3? I'm sorry, option 1.

CC-H Roger. Go ahead with ... 3.

18 15 34 ACDR Okay, I'm sorry. I gave you option 3 first. This is the option 1 to realine the orbital orientation. Same stars, 35, 37; NOUN 05, all balls; NOUN 93, plus 191, plus 165, plus - plus 37. That was torqued at 53 plus 54 plus 15. Over.

CC-H Understand. The option 1: stars 35, 37, all balls; plus 191, plus 165, plus 37; 53:54:15.

ACDR Roger.

CC-H Apollo, Houston. I have a message for you all. Are you ready to copy?

ACDR Go ahead.

CC-H During the first transfer, just after the acquisition of Soviet TV and just after Tom enters the orbital module - Deke will still be in the DM - the Soviet leaders would like to pass a message to the crews of the Apollo/Soyuz mission.

ACDR Very fine, thank you.

CC-H I've got more. Immediately after - -

ACDR Go ahead.

CC-H Immediately after they have finished their message, bring the camera into the OM and set it up as planned. The AC and the DP will take positions around the OM table, and the President of the U.S. would like to relay a message to the commanders of both vehicles. The sequence will be that all will get into position and allow the commander of the Soyuz to welcome you to the OM, and the President will then speak. The docking module pilot is requested to give his headset to the Soyuz commander so the President may speak to the Soyuz commander.

ACDR Okay. Well, I think we got that.

18 17 50 CC-H Roger.

18 21 08 CC-H Apollo, Houston. Over.

ACDR Go ahead. Go ahead, Bo.

CC-H Roger. We'd just like a progress report on how the preparations for the transfer are coming before we go over the hill here.

ACDR Well, we're in good shape. We're ahead of schedule, just waiting around to sync the clock at - Deke'll sync the clock at 54:11.

CC-H Real fine.

18 21 36 DMP Hey, Bo, I'm just making one minor mod to your procedures down there. I've got enough hoses here in the DM to do the time sync right down here in the LEB from here without messing around coupling and uncoupling.

CC-H Say again, Deke. We did not understand what you said.

DMP Okay. I'm going to stay connected to the DM and do the time sync from the LEB mission timer connected to the DM comm.

CC-H Understand. You're going to stay connected into the DM and do the time sync from the LEB.

DMP Roger.

CMP Bo, CP. Last time we had a hard time locking up with the ATS. Do you have any idea what was wrong, and should we expect any more problems?

18 22 30 CC-H Let me check on that with INCO.

18 23 10 CC-H Vance, Houston. We don't have any good reason for the ATS not locking up, and all we can suggest is to try the normal procedure again.

CMP Okay.

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CC-H Hello, Vance; Houston. Over.

ACDR Houston, Apollo.

18 24 17 CC-H Go ahead, Tom.

END OF TAPE

Day 198

TAG Tape 198-10/T-28
Time: 198:18:40 to 198:20:00
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

18 58 41 CC-H Apollo, Houston through MILA. Over.
CMP Loud and clear, Bo. How do you read?
CC-H We would like the UP TELEMETRY switch to DIRECT on panel 230.

18 58 51 CMP UP TELEMETRY, DIRECT. Roger.
CC-H And while you're down there, Vance, the other thing is, on panel 400, we would like the VTR POWER switches, the TELEMETRY, INTERLEAVER, and VTR, all to the ON position.
CMP Okay. You were cut out. Please say again VTR position and VTR POWER.
CC-H Roger. The three VTR POWER switches on the right - on the left-hand side - all to the ON position.

18 59 17 CMP That's verified.
CC-H Thank you.
CC-H And, Apollo, could you give us a progress report on the transfer?
DMP Yes, Bo, if you're reading - we've - we're on step 19, but actually we've also completed 20 and 24.
CC-H Understand; you're on 19, but you've done 20 and 24 as well.
DMP That's affirm - except for the last part of 24; we'll do ... comm reconfiguration.
MCC-M Go ahead.
CC-H And, command module, Houston. On panel 230, we would like the UP TELEMETRY switch to UP TELEMETRY.

19 00 04 CMP UP TELEMETRY switch to UP TELEMETRY. Roger.
CC-H And, Apollo, we show the spacecraft in FREE at the present time.

19 00 35 CMP Roger. Back to CMC AUTO.

 CC-H Thank you.

 CMP And would you like a maneuver back, Bo, to the -
 just the right attitude?

 CC-H Roger.

 CMP Say the angles you'd like, Bo. Roll, pitch, yaw.

 ACDR (...)

 ACDR (Four.)

 USA Go ahead.

 SCDR (You, too.)

19 02 47 CC-H Docking module, Houston. Could you tell us if the
 portable light is on? We're getting a picture that's
 a bit bright.

 ACDR Negative, it's not, Bo. We've got it set up to turn
 it on, but we haven't got it on.

 CC-H Roger. Understand. It is not on at this time.

 ACDR (Soyuz, this is Apollo. What is your step 19? Is
 step 19 in normal? How many minutes, please?)

19 06 37 SCDR Apollo, Soyuz.

 ACDR (Standing by, Soyuz.)

19 06 42 SCDR Tunnel 2 pres - tunnel 2 pressure integrity is okay.
 Step number 19 is completed.

 ACDR (...)

 SCDR Roger.

19 07 31 ACDR (Soyuz, this is Apollo. Now our step 20 is completed.)

 SCDR Roger. Step number 20 is completed.

 CMP Do you have a good lockup on the ATS?

CMP Houston, Apollo. \

CC-H Apollo, Houston. Go ahead.

CMP Bo, do you have a good lockup on ATS now?

19 08 36 CC-H Roger. We're reading you but you have a bit of an echo.

SCDR Tom, ... tunnel 2 - Soyuz.

19 08 48 ACDR (Say again, please.)

19 09 05 ACDR (Soyuz, this is Apollo. We're doing 21. Over.)

19 09 47 ACDR Houston, Apollo. We've completed step 20, and they're working on step 21.

CC-H Roger. Understand you've completed step 20.

ACDR Roger.

CC-H And, Tom, we've got a picture of you right there, to the right of the hatch. Looks fine.

ACDR Okay..

ACDR He's got ...

DMP Yeah.

CC-H Deke, we had a picture of you there in front of the TV, and may we suggest you move to the right or the left of it.

ACDR You talking to me?

CC-H No, that was to - to the docking module pilot. Tom, yours looks just fine.

ACDR You want to get your - -

DMP I didn't hear your message there, Bo.

DMP Okay. You're talking about that camera. Oh.

ACDR Yeah.

DMP Okay. You didn't like the picture we had on the other one, huh? (Laughter) We can't fix that.

19 11 22 ACDR Okay. And 37. He's at 40 right now.
DMP Damn. Got to perform a ... some time here.

19 11 40 ACDR (Soyuz, this is Apollo. Now hatch 4 is open. Over.
Roger. Roger.)
CC-H Go ahead, INCO.
CC-H Negative.
ACDR Oh, okay.
DMP Hey, I can hear it.

19 11 55 SFE (Hatch 4 is open. We are now equalizing the pres-
sure between the docking module and the Soyuz.)
ACDR Okay. ...
MCC-H CAP COMM, let's tell him we're not hearing any
Soyuz crew remarks right now. We were a little
while ago.
ACDR I didn't hear you transmit.
DMP Yeah. Opening.
ACDR (Is it open?)
CC-H Apollo, Houston. We're not hearing the Soyuz relay
at this time.
DMP Okay. We think they said hatch 4 is open, but
we're standing by to confirm it.
CMP Roger, Bo. Let's give it a check.

19 12 48 DMP (Soyuz, this is Apollo. Hatch 4 is open?)
ACDR Something's shaking.

19 13 01 CMP Okay, Bo, the configuration looks good.
CC-H We copy, Vance.
ACDR Oh, hell, that's Vance thrusting.

DMP I don't know.

CC-H And, Vance.

DMP (Soyuz, this is Apollo. Is your step 22 finished - completed? Over.)

CC-H Vance, on panel 10 - check that the PHONE/MIC INTERCONNECT is ON and the FM's ON.

DMP I think that's those guys shaking around there.

CMP Okay. The PHONE/MIC INTERCONNECT is ON. The F - VHF FM is on RECEIVE. And the setting's about 5.

ACDR We're running a couple of minutes behind ...

CC-H Thank you.

19 13 44 ACDR How's that pressure?

DMP Well, it's staying right there. Looks like they're having trouble with their hatch.

ACDR Yeah.

ACDR (Soyuz, this is Apollo. How do you read me?)

19 13 59 SCDR Hey, Tom, hatch 4 is open, open.

ACDR (Roger.)

DMP Good show.

19 14 05 ACDR (We're now working on step 23, and we are equalizing the pressure between the Soyuz and the docking module.)

CMP Hey, Deke?

DMP Go ahead, Vance.

CMP Did you want panel 6 MODE to VOX to adjust sensitivity?

ACDR Okay. It's open, Deke. That's enough. It's open.

19 14 25 DMP Yeah. Oh, boy, we might have missed a step here in - -

CMP We sure did.

DMP - - the comm configuration, Tom.

ACDR Hold it. Just a second.

19 14 28 CMP Okay. You got it. How's that?

DMP When we stepped ahead. Where the heck was that?
It's by the TV camera thing.

CMP Okay. Let me put it to VOX.

CC-H Docking module pilot, would you move to the right
a bit, so we can see the picture?

DMP Roger.

CC-H Thank you.

19 14 55 DMP Oh - somewhere.

ACDR Watch - back, back, back, back.

CMP It's right around - "Prepare Apollo TV."

ACDR It's back one more step.

DMP I think it's time - was around 41 minutes. I don't
think we're to it yet.

CMP Okay.

DMP It's just ahead.

CMP Let's see - the time is - -

DMP Yeah, it was here. Yeah. Right.

CMP Okay.

DMP Okay.

19 15 24 CMP About 52, I guess.

ACDR Okay, here we go. Now ask him to do it.

DMP Okay. But we got the valve open?

ACDR We got the valve open.

DMP Okay.

CC-H Apollo, Houston. We're still - not reading Soyuz comm, but we are reading you hot mike.

ACDR Okay.

19 15 45 DMP Okay, Vance. Now, on panel 6, MODE to VOX.

CMP Okay, VOX -

DMP VOX sensitivity as required - approximately 7.

CMP Okay.

DMP On panel 98 - thumbwheel VOLUME down to eliminate squeal.

19 15 51 CMP Okay. You got it.

DMP Great. Okay, that did it.

19 15 57 ACDR (Soyuz, our step 23 is completed. We are now working on step 24.)

DMP Yeah. We're through with that, too, Tom.

DMP Right here - 25. ... Here, let me get the light on.

ACDR ...

DMP ... Camera. Just a sec. Yeah. We're right on schedule. Okay, there.

ACDR Okay. Go to unlock.

DMP The camera is running.

DMP Okay. Right on schedule.

DMP Perform hatch opening.

19 16 33 CC-H Deke, Houston. We're not hearing Soyuz. Can you hear them all right?

DMP No. We're not hearing them, Bo.

ACDR (Soyuz, how do you read?)

DMP Are you hearing us?

ACDR (I am ready to open hatch 3.)

CC-H We don't hear them down here.

DMP ... you reading us, Bo?

CC-H We read you, Deke, loud and clear but we do not read Soyuz.

19 17 01 DMP Okay. Well, we're not reading them much either.

ACDR We - we can read them - a little bit.

CC-H Understand.

DMP Picture looking okay down there, Bo?

CC-H We've got a great picture of Tom and the hatch.

19 17 19 ACDR All right. (Okay. I am opening hatch 3.)

DMP Okay, the camera - -

ACDR-DM Ah-hah! (Hello!)

DMP-DM It'll stay open.

DMP-DM Go ahead - go ahead, Tom.

SCDR-OM Sure is good ...

ACDR-DM Alexey ...

SCDR-OM ...?

ACDR-DM Just a moment.

ACDR-DM Fantastic.

SCDR-OM ...

DMP-DM (How are things going?)

19 17 50 ACDR-DM Let's cut the film, then we'll cut in - turn it off, then we'll turn it on again.

USSR ...

DMP-DM Oh, listen. That's that ...

DMP-DM Okay, at 51, you're supposed to go into the Soyuz.

ACDR-DM Come in here and shake hands.

ACDR-DM ...

ACDR-DM (Come here, please.)

ACDR-DM Looks like they got a few snakes in there, too.

DMP-DM Yeah.

ACDR-DM They're almost as bad off as we are ...

19 18 57 ACDR-DM (Alexey. Our viewers are here. Come here, please.)

USSR ...

ACDR-DM (Yes. Come here.)

USSR ...

19 19 24 ACDR-DM Okay, turn on the camera; hit the REMOTE.

DMP-DM Okay.

ACDR-DM Here.

SCDR-OM Glad to see you.

ACDR-DM Glad to see you.

ACDR-DM Here.

SCDR-OM Deke.

DMP-DM (Very - very happy to see you.)

SCDR-OM ...

ACDR-DM (This is Soyuz and the United States.) (Laughter)

USSR-OM (Laughter)

ACDR-DM ... (Valeriy! Come here. Valeriy! How are things?)

SFE-OM Hello. I'm glad to meet you.

ACDR-DM (We too.)

ACDR-DM Okay.

19 20 29 CC-H Command module, Houston. We're still not hearing
Soyuz well. Are you hearing them?

ACDR-DM Loud and clear. Can you see us on your picture?

CMP-CM Rog.

ACDR-DM ... there.

19 20 51 CC-H Vance, in order to check the configuration, would
you check on page S/1-40.

ACDR-DM (Laughter)

CMP-CM Say again.

CC-H We'd like you to check the configuration as per
S - Systems Checklist 1-40.

CMP-CM Rog. Which checklist?

CC-H The Command Module Systems Checklist.

CMP-CM Roger. Rog. Okay.

ACDR-DM Yeah?

MS-DM (Laughter)

SCDR-OM It's a good picture?

ACDR-OM How do you read, Houston?

CC-H We read you loud and clear, Tom.

ACDR-OM Okay. Did you get the picture?

19 22 11 CC-H Roger. We've got a good picture of the hatch and you people inside there, in the tunnel.

ACDR-OM Okay.

ACDR-OM (Do you have a book for me? A book?)

SCDR-OM (Moscow, this is Soyuz. Read you very well.)

USSR (... is over its own AOS.)

ACDR-OM Okay.

DMP-DM Tom, are you ready for the camera off yet?

19 25 40 CMP-CM Are you reading Soyuz now?

ACDR-OM Hold on to that.

DMP-DM I'll just hold onto this ...

CC-H Apollo, Houston. Go ahead.

CMP-CM Houston, how's your comm now?

CC-H Roger. We read you well, Vance.

CMP-CM And Soyuz?

19 26 39 MCC-H We're not reading Soyuz.

CC-H We are not reading Soyuz.

USSR (Moscow, this is Soyuz. How do you read?)

CC-M (I read you well. We are very grateful and excited by these warm words. And we will work even better.)

USSR (Thank you very much.)

DMP-DM Okay, Tom, I guess - -

19 27 31 CC-H Apollo, Houston. We are now reading Soyuz.
CMP-CM Roger.
USSR (Everything is nominal. Have you turned off the other camera?)
DMP-OM ...
USSR-OM (Once more we would like to thank you for these warm words and would like to say, in answer, there is so much to say, and we have so little time.)

19 28 36 DMP-OM Bo, you reading us?
ACDR-OM Houston, Apollo. How do you read?
CC-H We read you well. Go ahead.
ACDR-OM Okay. Do you want Deke to give his headset now to Alexey?

19 28 55 CC-H Tom, we would like everybody around the table and the TV set up, and then we'd like Deke to give his headset to Alexey.

19 30 28 CC-H Apollo, Houston. We're getting a pretty good TV picture from the orbital module, but it appears to be upside down. Could you check the shoe?
ACDR-OM Oh, Jesus, ...
ACDR-OM ...

19 31 08 ACDR-OM Okay.
DMP-OM Got it?
ACDR-OM Going to have to turn it to - -

19 32 18 ACDR-OM Okay, let me see.
DMP-OM I think we can get it, Tom, so it'll - -
ACDR-OM Okay.
DMP-OM - - look ...

ACDR-OM ... for a while ...

ACDR-OM Bo, how's your picture?

19 33 31 CC-H The picture looks good. If the f-stop is not full open, please open it.

ACDR-OM Okay. Turn.

ACDR-OM See that all right, Bo?

19 34 23 CC-H Apollo, Houston. It's still a little dark, but if that's full open, that's as good as we can do.

ACDR-OM Yeah, she's wide open.

DMP-OM It's wide open.

CC-H Roger. The only other thing is to verify that the proper lights are on in the Soyuz.

ACDR-OM Okay.

ACDR-OM ...

19 35 18 CC-H That looks good now, and we're ready for the SC's speech, sir.

ACDR-OM Okay.

19 35 51 ACDR-OM Okay. We got - Alexey's on Deke's headset. How do you read, Houston?

CC-H We read you loud and clear, and we have a good picture.

ACDR-OM Understand. And Alexey has on Deke's headset.

MCC-H The astronauts are on the line, sir.

FORD Gentlemen, let me call to express my very great admiration for your hard work, your total dedication in preparing for this first joint flight. All of us here in Washington in the United States send to you our very warmest congratulations for your successful rendezvous and for your docking and we wish you the very best for a successful completion of

the remainder of your mission. Your flight is a momentous event and a very great achievement, not only for the five of you, but also for the thousands of American and Soviet scientists and technicians who have worked together for 3 years to ensure the success of this very historic and very successful experiment in international cooperation. It's taken us many years to open this door to useful cooperation in space between our two countries. And I'm confident that the day is not far off when space missions made possible by this first joint effort will be more or less commonplace. We all look forward to your safe return, and we follow with - with great interest the success so far, and we look forward to talking with you on Earth again when you do end your flight. General Stafford, Tom, now that you've had an opportunity to test the new docking system, do you think it will be suitable for future international manned space flight?

19 38 32 ACDR-OM Yes, sir, Mr. President, I sure do. Out of the three docking systems I've used, this was the smoothest one so far. It worked beautifully.

FORD About 3-1/2 hours ago, I sat here in the Oval Office and watched the docking procedure. It looked awfully simple from here; I'm sure it wasn't that simple for the five of you. Let me, if I might - -

ACDR-OM ... it's a lot - -

FORD Yes, Tom. Let me say a word or two, if I might, to Colonel Leonov. The docking was a critical phase of the joint mission. Colonel, could you describe it, and would you describe the reaction of the crews on meeting in space after such a long preparation?

19 39 32 SCDR-OM Mr. President, I'm sure that our joint flight is a beginning for future cooperation in space between our countries. Thank you very much for very nice words to us. We'll do our best.

FORD Colonel, I think you and the other four have done very, very well so far, and may I congratulate you and your associates on this great achievement. Now, Dr. Slayton, Deke, you've had a very, very long

record of distinguished service preparing other astronaut crews for various space missions, and we're extremely pleased to see you on the crew of the first international manned space flight. As the world's oldest space rookie, do you have any advice for young people who hope to fly on future space missions?

FORD Deke, did you have a chance to hear my question?

DMP-OM No, sir, Mr. President, unfortunately.

19 41 12 FORD Can I repeat it and - -

DMP-OM Well, Tom just repeated it for me, sir. Well - yes, I have a lot of advice for young people, but I guess probably one of the most important bits is to, number one, decide what you really want to do and then, secondly, never give up until you've done it.

FORD Well, you're a darn good example, Deke, of never giving up and continuing, and I know it is a great feeling of - of success from your point of view to have made this flight *** your four associates.

DMP-OM Yes, sir.

FORD Vance Brand, I know that you're still in the Apollo and holding the fort there. It's been my observation that the crews on both sides have worked very hard to learn Russian on the one hand or English on the other. Has this training period, which is so important, stood the test in the complicated procedures that all of you must execute in this very delicate mission.

19 42 33 CMP-CM Mr. President, I believe it really has. I think, in a way, our project in - in particular, the training that we've undergone, has been a - sort of a model for future, similar projects. I think it's been a real pleasant experience to work on learning Russian and to be able to work with the cosmonauts, and I think we'll have some ideas that would probably help people in the future on similar tasks.

19 43 08 FORD Thank you very much, Vance. I might like to say a word or two to Valeriy Kubasov, the other member of the cosmonaut crew. I might say to him, as well as Colonel Leonov, I remember both of you, on that enjoyable Saturday last September, when both crews visited the White House and joined me in a picnic over in Virginia. We flew from the White House over to this picnic just across the river. We had some crab specialties that I enjoyed and I think you did. I'm sure you're having a little different menu, somewhat different food on this occasion. What are you having over there out in space?

SFE-OM We are having good spacefood. There are some Russian soup, some Russian ... (laughter), some juice, some coffee, and a lot of water (laughter). No beer; no crab.

19 44 39 FORD Well, let me say in conclusion, we look forward to your safe return. It's been a tremendous demonstration of cooperation between our scientists, our technicians, and, of course, our astronauts and their counterparts, the cosmonauts from the Soviet Union. I congratulate everybody connected with the flight, and particularly the five of you who are setting this outstanding example of what we have to do in the future to make it a better world. And may I say in signing off, here's to a soft landing.

19 45 27 SFE-OM Thank you, very much.

ACDR-OM Thank you, Mr. President. It's certainly been an honor to serve the country and work here.

FORD We'll see you when you get back.

19 45 36 ACDR-OM Yes, sir.

ACDR-OM ... 15.

ACDR-OM ... Deke?

DMP-OM Yeah?

ACDR-OM Okay, ... on that check *** ... Apollo TV setup. You got that setup done?

19 47 05 ACDR-OM Houston, Apollo.

CC-H Roger, Apollo. We're standing by for your presentations.

ACDR-OM Okay. You're ready for the presentation now, and how much more time do we have on ATS, Bo?

CC-H We still have about 10 minutes.

ACDR-OM (Yes.)

19 47 27 ACDR-OM Deke, come on down.

DMP-OM Okay.

ACDR-OM We got 10 minutes here, and we'll do it real fast.

ACDR-OM ...

19 48 21 ACDR-OM ... Okay, Deke. Put on your helmet.

19 48 28 ACDR-OM Turn on the TV..

DMP-OM Ready?

MS-OM ... (Laughter)

19 48 39 ACDR-OM (Alexey, Valeriy. Permit me, in the name of my Government and the American people, to present you with five flags for your Government and the people of the Soviet Union. May our joint work in space serve for the benefit of all countries and people on the Earth.)

SCDR-OM Your people ...

ACDR-OM Thank you very much, Alexey, thank you. (Thank you very much.)

19 50 01 CC-H Apollo commander, Houston. We're still not hearing the Soyuz crew well. Could you ask them to check their FM configuration?

ACDR-OM Roger. (Houston says that - that they still don't hear you very well. Check your VHF FM.)

DMP-OM ... Valeriy.

19 50 27 ACDR-OM Valeriy will check it right now, Bo.

CC-H Roger.

SFE-OM Houston, Soyuz, how do you read me?

CC-H Roger. That time we read them - read them well.
It seems that they are ...

SCDR-OM Houston, how do you read me?

19 50 54 ACDR-OM Did you read Alexey then?

CC-H Roger. We did read him then.

DMP-OM If we're supposed to be on VOX, Bo, I think that's
part of the problem. We're slipping or else not
keying.

ACDR-OM (A very long day.)

SFE-OM A very long day.

ACDR-OM A very long day.

CC-H Roger, Deke; we agree. It seems they aren't coming
through on VOX very well and, Deke, if you can move
over to your right a little bit, it - we'd have
you better in the picture.

19 51 32 DMP-OM Well, we'll try that.

DMP-OM Yeah, okay, thank you.

ACDR-OM Okay. Valeriy's checked the VHF FM, and he said
it's ON. (Please speak in your headsets.) Oh ...

SCDR-OM Houston, Soyuz. How do you read me?

19 51 57 CC-H We read - (we heard you well now.)

19 52 06 SCDR-OM Just now, Tom Stafford gave me - gave us little flags from American people and their - from American Government. Thank you very much for these very expensive presents. Soyuz crewmen - gave Soyuz flag to Tom Stafford from our people and from our Government.

ACDR-OM (Thank you, Alexey.)

19 52 44 SCDR-OM A very long day. About 2-1/2 years.

MS-OM (Laughter)

DMP-OM Yeah.

CC-H Deke, Houston. We don't know if you can get to it, but if you can, would you check that the camera's in AVERAGE and not PEAK?

19 53 04 DMP-OM In AVERAGE not PEAK. Okay, in work.

ACDR-OM I can try it, but ... on those things.

19 53 35 ACDR-OM There it is.

DMP-OM You got two choices there, Bo. Which one do you like?

ACDR-OM That's lots better on the monitor.

DMP-OM ...

19 53 47 ACDR-OM Is that better, Bo?

CC-H Roger. That looks like a better picture now, Apollo.

DMP-OM Okay.

ACDR-OM What was it in?

DMP-OM Well, it was the opposite of what I just put it to.

MS-OM (Laughter)

ACDR-OM Yeah. Look at this - the monitor's - -

ACDR-OM ... the gifts. Put the Amer - -

DMP-OM Got that done. Okay.

ACDR-OM Didn't we get a UN flag? Stow flags in the TSB.

DMP-OM Okay.

19 55 28 CC-H Apollo, Houston. There are 2 minutes until LOS.
We will see you at Vanguard at 1:38 transfer time.

19 55 36 ACDR-OM Roger. 1:38 transfer time.

DMP-OM Okay. What do we do next here, Thomaso?

ACDR-OM What time do you have?

19 55 52 ACDR-OM I got 30:26.

DMP-OM Yes ...

19 56 15 DMP-OM I'll tell you, Tom, I think -

DMP-OM ... connect those connectors here ...

SCDR-OM ...

CC-H Command module, Houston. We would like you to turn
the three TV POWER switches on panel 181 OFF.

19 56 52 CMP-CM Roger. 181, the three TV POWER switches OFF.

END OF TAPE

Day 198

TAG Tape 198-11/T-29
Time: 198:20:00 to 198:21:30
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

20 09 08 CC-H Apollo, Houston through Vanguard for 7 minutes.
ACDR-OM Okay, Bo. We have the cables hooked up between the two spacecraft. How do you read?
CC-H We read you well, Tom.

20 09 20 ACDR-OM And I'm now putting on the speaker ***
CC-H Understand you're putting on the speaker box.
MCC-H What's the problem?

20 10 48 ACDR-OM Still reading us, Bo?
CC-H Roger. We still read you well.
CMP-CM ...
ACDR-OM Yeah, Vance. I read you.
ACDR-OM Bo, how do you read through the speaker box here in the Soyuz?
CC-H Tom, we read - -
ACDR-OM Bo, how do you read through the speaker box. Over.
CC-H We read the speaker box although not quite as clear as the headset.

20 11 15 ACDR-OM Okay, I can read you loud and clear through the speaker box, Bo. Thank you.
ACDR-OM Yeah, okay. Right, Vance.
CC-H Command module, Houston. Over.
CMP-CM Go ahead, Houston.
CC-H We'd just like to remind you about the maneuver at 55:52, so that we can have ATS when we come back into coverage.
CMP-CM Understand, Bo.

SFE-OM Vance, how do you read me?

CMP-CM (Valeriy - all right, Valeriy. Very good.)

SFE-OM (Okay, I read you also.)

20 15 13 CMP-CM (Apollo, Soyuz.) (Laughter) (Soyuz, this is Apollo.)

SCDR-OM ...

CMP-CM (Alexey, are you ready for inertial orientation?)

CC-H Apollo, Houston. We're going over the hill here at Vanguard. We'll see you at MILA at 17:00.

CMP-CM Roger.

SCDR-OM Ready for orientation.

CMP-CM (All right. We will be doing inertial orientation.)

20 33 15 CC-H Apollo, Houston through MILA for 5 minutes ...

ACDR-OM Roger. How do you read, Bo?

CC-H Tom, we read you rather weakly.

ACDR-OM Well, the speaker box is on.

20 33 54 ACDR-OM How do you read now?

CC-H We read you better now.

ACDR-OM We have the speaker box in here. I'm going to turn the speaker box off as long as we're in Soyuz.

CC-H Roger. We understand.

DMP-OM ... He is eating his spinach.

SCDR-OM ...

DMP-OM 75 ... 2 ...

CMP-CM ...

20 34 23 DMP-OM We MARK 24. Thank you.

Day 198

CC-H We MARK 24. Thank you. And we - during the rev - -

20 34 36 DMP-OM MARK. And the 220 ...

CMP-CM ... We show the ... coming up on our pass.

ACDR-OM Okay, Vance. How do you read? Okay.

CMP-CM Roger. About 30 seconds before we can update.

ACDR-OM Okay, Vance. Select flight ***

CMP-CM ...

ACDR-OM Okay. You've already done it. Okay.

CMP-CM Yeah.

ACDR-OM Okay. If you - the step's already completed.

20 36 01 CC-H Apollo, Houston. We will go LOS in less than a minute. We'll see you on ATS at 56:20.

ACDR-OM Roger.

ACDR-OM What's that in, phased elapsed time and transfer time, Bo?

CC-H I'll have to look that up, Tom. Hold on just a second.

20 36 35 CC-H Right now, our transfer time is 2:05, and we'll have ATS at about 2:10.

ACDR-OM The ATS in 5 minutes. Thank you, Bo.

20 41 48 CC-H Apollo, Houston. How do you read? Command module?

CMP-CM Loud and clear, Bo. And we've shift - switched off the VHF FM for a while.

CC-H Okay. And we would like you to turn those three TV POWER switches back ON on panel 181.

20 42 11 CMP-CM Stand by.

20 43 07 CMP-CM Okay, Bo. You've got VHF back, too.

CC-H Roger. And we're getting a TV picture. We see you, Vance.

CMP-CM Roger.

20 44 28 SCDR-OM (George, we have an awful lot of work here, and we haven't paid any attention to that. We just can't find those joint documents.)

SCDR-OM Tom Stafford and Deke Slayton are sending best wishes to you.

CMP-CM (The command module also sends its greetings.)

20 45 25 CC-H Apollo commander, Houston.

ACDR-OM Go ahead, Bo.

CC-H Sir, we'd like you to verify that you turned the speaker box in the Soyuz off.

ACDR-OM That's affirmative. I did.

CC-H Roger. We're getting a squeal, and we thought that maybe you hadn't had a chance to do so.

ACDR-OM No. I'll recheck it but - -

CC-H Understand.

ACDR-OM The speaker box is on in the docking module.

DMP-OM Don't you want that one on, Bo? It's supposed to be on per the Flight Plan but we can turn it off.

CC-H Roger. Why don't you try turning that one off, Deke, for us, please? Or whoever has a chance.

DMP-OM Okay.

20 46 29 DMP-DM Okay. It's off. Is that any better?

ACDR-OM How do you read now, Bo?

CC-H That's much better.

ACDR-OM Yeah, I can tell we don't have a squeal now.

DMP-DM Okay.

CC-H And, Deke, while you're up there, if you could shift that camera on 874 so it looks down the hatch, we'd get a better picture. I'm sorry.

DMP-DM Okay. I thought it was. I'll check it.

DMP-DM Okay. How does that look to you?

20 47 24 DMP-DM I can't tell much on this monitor, Bo. So you had - check it and let me know when you like it.

CC-H Roger, Deke. Hold on just a second, please.

DMP-DM Okay.

CC-H That's good, Deke.

DMP-DM Okay.

20 49 35 USA ...

USA (...)

USSR Switch 236.

USSR ... 1764. ...

20 52 48 ACDR-OM (Laughter) Houston, Apollo.

20 52 51 CC-H Apollo, Houston. Go ahead.

20 52 53 ACDR-OM Yeah, Bo. Are you getting ... picture in the orbit - in the Soyuz now - in the orbital module? All I can get on my monitor is just the - a screen. It's really - really brightened out.

CC-H Right now, we're looking at one - -

ACDR-OM Okay. Thank you.

CC-H - - down through the hatch, and we see that quite well.

CC-H The other camera we were getting a picture on, but you're often in front of it. But that's just supposed to be a stowage location for that camera.

ACDR-OM Okay.

20 53 37 ACDR-OM Okay. We got the document set up.
CC-H Roger. You're getting ready to sign - -
ACDR-OM We're going to sign the document soon. Roger.

20 54 01 CC-H Tom, we're looking over your left shoulder now, and we see the table quite well. So if you're getting ready to sign the certificate, that should be a good shot.
ACDR-OM Okay.

20 57 04 CC-H Joint crew, something seems to be floating up the docking module tunnel. It's probably the certificate tube.
DMP-OM We'll recover the tube in a minute there, Bo.
CC-H Roger. I just didn't want you to be looking for it.
DMP-OM Thanks. Appreciate that.

21 02 31 CC-H Command module, Houston. Could we have you open the lens on your TV camera wide open.

21 02 39 CMP-CM Rog. Can do, Bo.

21 03 21 CMP-CM It's all the way open, Bo. It has been.
CC-H Thank you.

21 07 39 ACDR-OM Houston, Apollo.
CC-H Apollo, Houston. Go ahead.
ACDR-OM Yeah, Bo. Do you have a camera on in the orbital module?
CC-H I don't know - -
ACDR-OM ...
CC-H - - sir. We're looking at the one down the tunnel at you.
ACDR-OM Let's take a look at the one in the orbital module.

CC-H Okay, we'll ask INCO. Roger. We see the one in the orbital module, and we see the tubes.

CC-H That's soup on the right - "soaks" on the right-hand side?

DMP-OM In English, you spell that c-o-c-k-a.

21 08 39 ACDR-OM What is the joke?

21 13 05 CC-H Apollo commander, Houston.

ACDR-OM Go ahead.

CC-H We're getting a good picture here, and we're wondering what you're eating down there. If you have a - -

ACDR-OM ***

CC-H - - chance, maybe you could tell us a little about it.

ACDR-OM Sure thing. Right now, I've just finished some strawberries, reconstituted. And Deke and I - Deke's eating some, too. We're getting ready to eat some borscht, that you can see here.

CC-H Roger.

ACDR-OM Got the tube.

CC-H We see the tube.

ACDR-OM After that, I'm going to have turkey with cran - apple and cranberry sauce. Also, I have apple juice here, which they made a little joke and had a different label on the other side of it. This says (unusual juice.) This something different. It's apple juice.

DMP-OM My menu is borscht and ... and Roquefort cheese and apple and cranberry - and apple and plum sticks and sweet apple juice. You can tell I like apples.

CC-H Roger on the apple juice.

21 15 01 ACDR-OM And this is "Jantar" cheese, known as "syr Jantar."

CC-H Amber cheese.

ACDR-OM And here is Russian bread, known as "...", little bitty, small, miniature loaves of it.

SCDR-OM Turkey.

ACDR-OM Turkey, which is "indeyka" (in Russian).

CC-H We can read it.

21 19 47 ACDR-OM Houston, how much more time do you have on ATS?

CC-H We have about 10 minutes left on ATS.

ACDR-OM Okay.

ACDR-OM I guess you're getting a good picture from the docking module looking down here in the tunnel, right?

CC-H We're getting both the picture through the tunnel and the one over your left shoulder.

ACDR-OM Okay.

ACDR-OM Here's cranberry dressing.

ACDR-OM You always have to have cranberries with turkey, right?

CC-H Say again, Tom. I understood the cranberries. I didn't understand the last.

ACDR-OM Usually have that with turkey.

CC-H Roger.

21 21 02 CC-H Command module, Houston. Over.

CMP-CM Go ahead, Bo.

CC-H Vance, we'd like you to check that the command module camera is on AVERAGE, and we'd like you to turn up the lights a bit, in the command module, if you can conveniently do so.

CMP-CM Okay. I'll see what we can do.

21 27 02 CC-H Apollo commander, Houston. We've lost TV. We're going to get a little bit of data here before we go over the hill.

CC-H Command module, Houston. Over.

21 27 36 CC-H Command module, Houston.

21 28 05 CC-H Command module, Houston.

CMP-CM Go ahead, Bo.

CC-H Roger. We're getting ready to go LOS here at ATS, and we'd like you to turn the three TV CAMERA POWER switches on 181 to OFF.

CC-H And, Apollo, Houston. There is approximately 1 minute until LOS. We'll see you at Vanguard at 57:21. That's about 3 hours plus 10 minutes transfer time.

CMP-CM Okay, Bo. You said about two words, and then you cut out completely. Sorry I didn't get your information.

CC-H Understand. I'll say them again. We would like the three TV POWER switches on panel 181 turned off. And we're going LOS; we'll see you at Vanguard at 57:21.

CMP-CM Okay, three switches coming OFF.

CC-H Roger.

21 29 52 CC-H Apollo commander, Houston. If you read, do not do the TV camera relocation in step 38.

ACDR-OM All right, Bo. Sure will.

CMP-CM And we got one of our standards alarms, Bo.

21 30 08 CC-H We copy.

END OF TAPE

Day 198

TAG Tape 198-12/T-30
Time: 198:21:30 to 198:23:00
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

21 41 55 CC-H Apollo commander, Houston through Vanguard for 6 minutes.

ACDR-OM Okay, Bo.

CC-H And could you tell us how you're progressing on your activities?

ACDR-OM We're still eating.

CC-H Understand.

ACDR-OM We're running a little late, but we'll get back with it shortly.

CMP-CM And, Houston, command module.

CC-H Go ahead, command module.

CMP-CM Have you guys worked on a computer patch for this computer alarm triggering thing?

CC-H Roger. We have one, and we're going to give it to you just before sleep, so that you can put it in then.

CMP-CM Okay, it's triggering quite often now.

CC-H Understand.

21 43 07 CC-H Command module, Houston. Have you been getting any more CRYO PRESSURE alarms?

CMP-CM Negative. No more of those, Bo.

CC-H Thank you.

21 45 07 CC-H Apollo - command module, Houston. Could we have you set a RESET on the computer, please?

CMP-CM Please repeat.

CC-H We'd like you to punch error RESET on the computer.

CMP-CM Right.

MCC-H We know what to do with the net, sir.

CC-H Apollo, Houston. There is 1 minute until LOS. Next AOS is Goldstone at 57:39 for 3:29 transfer time.

21 47 04 CMP-CM Roger. See you then.

21 59 14 CC-H Command module, Houston through Goldstone. How do you read?

CC-H Command module, Houston through Goldstone for 6-1/2 minutes. How do you read?

CMP-CM Read you fine. You were cut out by ground traffic. Please go ahead.

CC-H Roger. I've got a note here about this ICDU fail indication. Are you ready to copy?

CMP-CM Ready to copy.

CC-H First, just the prose. We want to inhibit the CMC generation of an ISS warning for ICDU fail indications.

CMP-CM Roger. Stand by. I've got to turn the VHF off to copy.

CC-H Roger.

22 00 22 CC-H And, Vance, while you're down there, on 181, we need those TV camera switches back on.

CMP-CM Roger.

CMP-CM Ready to copy, Bo.

22 01 27 CC-H Roger. We wish to inhibit the CMC generation of an ISS warning for ICDU fail indications. And this will keep false ICDU failures from turning on the caution and warning tone during the sleep period.

CC-H The jet on monitor EMP can - can be run in a normal fashion, and will still set the ISS warning for jet problems. To perform the inhibit, execute the following. Are you ready to copy?

CMP-CM Ready.

CC-H VERB 25 NOUN 7 ENTER, 1323 ENTER, 4 ENTER, and 1 ENTER. And you can do this any time you wish, now while we have data over Goldstone.

22 02 19 CMP-CM Okay, I understand that when I load this that the EMP will go into effect. The ICU [sic] EMP. And this is VERB 25 NOUN 7 ENTER, 1323 ENTER, 4 ENTER, 1 ENTER.

CC-H Right on the numbers.

CMP-CM Okay, I'll do it right now.

CC-H We're watching.

CMP-CM Okay, it's complete. I still have an ISS light on. I guess that won't harm anything.

CC-H I'll check on that with Guidance.

ACDR-OM Houston, Apollo.

CC-H Apollo commander, go ahead.

ACDR-OM Yeah, for one thing, Bo, you might have them check the frequency of the Los Angeles tower. It's coming through loud and clear.

CC-H Understand.

DMP-OM So is London, and Paris, and New York.

ACDR-OM I'll take that back, Bo. It's ground control, not tower.

CC-H Roger. Understand. Los Angeles grounds.

CMP-CM And where do we stand on the RCS curve these days, Bo?

CC-H Say again, Vance. You were cut out. I'm sorry.

CMP-CM Roger. Where do we stand on the RCS curve?

CC-H Let me check. Vance, I understand we're very close to nominal, very, very close.

CMP-CM Roger.

CC-H And, command module, Houston. We request that you terminate battery Alfa charge.

22 05 02 CMP-CM Okay. Terminate bat Alfa charge.

CC-H Apollo, Houston. There is 1 minute until LOS. We'll see you on ATS at 57:52.

CMP-CM Roger. Understand.

CC-H And that's about 3 hours and 41 minutes, transfer time.

CMP-CM Okay, and we have most of the presleep checklist done in advance. Did you want any memory dump tonight, Bo?

CC-H Roger. Understand you've got most of that presleep finished.

CMP-CM Rog. One item on it is the E-memory dump, and I wondered if you'd like to have that.

CC-H Say again, Vance.

CMP-CM Page 1-49, E-memory dump, VERB 7^h.

MCC-H Okay, ... FIDO.

22 13 06 CC-H Apollo commander, Houston. It looks as if Moscow was trying to call Soyuz through the ship.

ACDR-OM ...

22 16 05 CC-H Apollo commander, Houston. We see you around the table there through ATS.

CC-H Docking module pilot, Houston.

DMP-OM Yes, go ahead, Bo.

CC-H Deke, it looks like to save a little time, we could do steps 49 and 55 together, when you get to that point.

DMP-OM Okay.

CC-H 49 is the hatches 3 and 4 integrity check, and 55 is the multi furnace - multipurpose furnace operations.

DMP-OM Okay.

CC-H And, command module, Houston.

CMP-CM Go ahead.

CC-H We'd like you perhaps to do step number 59, which - 57, which is the getting the hoses ready, when they're coming back.

ACDR-OM Sure. No sweat.

DMP-OM Okay, Bo, that's 49 and 55, you said?

CC-H That's right, Deke. Steps 49 and 55 together when - you get to them.

DMP-OM Okay.

22 19 13 CMP-CM Okay. Houston, Apollo. Got a P52 option 3 here for you a few minutes early, if you're watching.

CC-H Negative. We are not watching at this time.

MCC-H Go ahead.

ACDR-OM (Valeriy, come into the docking module.)

DMP-OM Bo, the DP.

CC-H Go ahead, sir.

22 22 02 DMP-OM I presume at this stage of the game you're interested in expediting things ASAP. Is that correct?

CC-H Roger. That's affirmative.

DMP-OM Okay.

DMP-OM That influences my activities here in the furnace once they get started. Thank you.

CMP-CM Houston, command module.

CC-H Go ahead, command module.

22 22 28 CMP-CM Okay, here's the results of P52. Stars 44 and 35,
NOUN 5, all balls; NOUN 93, X, 00.019; Y, 00.042;
Z, minus 00.00.

CC-H Understand. Stars 44 and 35, all balls; plus 19,
plus 42, and all balls.

CMP-CM Roger. Except Y is minus 42.

CC-H Understand. Minus 42.

CC-H Command module, Houston. How do you read?

CC-H Command module, Houston. Do you have a torquing
time for us?

CMP-CM CM. Please repeat.

CC-H Roger. We would like a torquing time, if you
have it.

CMP-CM Okay, you're - you're echoing. I understand you
want some kind of time. Let's see, we've been
into the transfer 3. Stand by.

CC-H Command module, Houston. We would like a torque
time.

CMP-CM Oh, okay. Rog; 03:52:50.

CC-H Roger. Transfer time of 03:52:50.

CMP-CM Rog.

22 24 57 CC-H Command module, Houston. We never did get a good
time hack from you on the transfer time. We have -
coming up on 03:54:05 -

CC-H NOW.

CMP-CM Yeah, you're right on. I've got 03:54:15 -

22 25 17 CMP-CM MARK.

CC-H Thank you.

ACDR-OM Bo, I'll be working on the multi furnace - pur -
multipurpose furnace shortly and getting closed out.

CC-H Roger. Understand.

ACDR-OM And we've already added the nitrogen.

CC-H Understand you've added the nitrogen. How much?

DMP-OM 20 millimeters.

ACDR-OM 20 millimeters.

CC-H Understand. 20 millimeters.

DMP-OM We're up to 537, total.

CC-H Understand. 537, total.

CC-H Docking module pilot, Houston.

DMP-OM Go ahead, Bo.

22 29 42 CC-H We've been having some problem with the - the gas in the furnace, and we'd like to tell you that it's important that you tighten those valves tight when you do the procedure, and see if that might help our leak.

DMP-OM Okay.

CMP-CM Houston, Apollo.

CC-H Go ahead.

22 30 51 CMP-CM Okay, per the presleep checklist, I'm to report to you BAT C volts are 37, PYRO BAT A volts are 37, and PYRO BAT B volts are 37.

CC-H Understand. All 37.

CMP-CM And happy to give you a - VERB 74 if you want it - per the procedure.

CC-H We're not quite ready for that. We'll give you a call, sir.

CMP-CM Right.

22 33 31 CC-H We see the "coming in" sign.

ACDR-OM I'll pan this, Bo, on the closeout.

CC-H "Welcome aboard, Soyuz." We see that, too. And the sketches. It's upside down right now, but I guess in space it doesn't make any difference. We read, "Oh, brave new world that has such people in it." It's still a little upside down. Do you see that sketch of Deke with his cowboy hat? And Tom next.

ACDR-OM That's some of Alexey's art.

CC-H Roger.

ACDR-OM Here's another one.

CC-H I guess that's Vance and you, Tom, huh?

ACDR-OM Yeah. It says (Welcome Soyuz.)

CC-H We see the ... again.

ACDR-OM Okay. I'm going to locate it - this camera down on TA-2.

ACDR-OM Houston, Apollo.

CC-H Apollo commander, Houston. Go ahead.

22 36 13 ACDR-OM Okay, Bo. I'm getting this located on TA-2 on step 42.

CC-H Understand. On step 42.

ACDR-OM I know I'm supposed to look up at the hatch, but it looks like it's going to be difficult from this angle. I don't know, even though we fitted it before over at Baykonur.

CC-H It looks pretty good. We can see the hatch.

22 41 11 CC-H Docking module pilot, Houston. When you move the TV camera to 873, verify that it is AVERAGE.

DMP-OM Okay, Bo.

DMP-OM Bo, you want that ... on the back to be AVERAGE. Right?

CC-H Roger, Deke. We would like it in AVERAGE.

CC-H Docking modu - module pilot, Houston.

DMP-OM Okay, Bo.

22 47 25 CC-H When you did the experiment activ - putting it into the furnace, did you do steps 8, 9, and 10 on page 7.2 of the Docking Module?

DMP-OM Yes. Affirmative.

CC-H Understand.

ACDR-OM Hey, Valeriy. (We'll see each other tomorrow.)

22 51 30 DMP Okay, Bo. If you read, we're both back in the DM and the hatch is going LOCKED.

CC-H Roger. Understand. You're in the DM.

DMP (Hatch 3 closed. Good, Valeriy. Yes. Thank you.)

22 53 43 DMP (4 closed.)

22 56 20 SFE Number 4 closed.

ACDR (Roger. We are getting ready for a new pressure dump from tunnel 2. Over.)

SFE (Apollo, Soyuz. We are ready for tunnel 2 de-pressurization.)

22 57 56 ACDR Roger. And I'm beginning to dump the tunnel 2 pressure.

SFE I'm monitoring.

DMP ...

CC-H Command module, Houston. Over.

CMP Go ahead.

22 59 48 CC-H On panel 181, we would like the three TV CAMERA POWER switches turned OFF.

END OF TAPE

Day 198

TAG Tape 198-13/T-31

Time: 198:23:00 to 199:00:30

Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

22 59 56 CMP That's the end of our TV for tonight, huh?

 CC-H Roger. They've been getting a little warm, and
 so we've been turning them off here when we don't
 have TV.

 CMP Okay.

23 00 17 ACDR (Access to the docking module from the Soyuz is
 closed.)

 SCDR Roger, Tom.

23 00 45 CC-H Apollo, Houston. There are 2 minutes until ATS
 LOS. We'll see you at Orroral at 58:44. That's
 about 4 minutes from now.

23 00 54 ACDR Okay.

23 01 55 DMP Hey, Bo, this is DP. How do you read?

 CMP Houston, Apollo.

 ACDR Yeah.

 ACDR No, stand by. We ought to have them on ATS yet.

23 02 29 CC-H Apollo, Houston. Did you call?

 ACDR Bo, are you still there?

 CC-H Roger. Still here.

 DMP Yeah, Bo, DP here. Can you read?

 CC-H Say again. And we are just ready to go over the hill.

23 02 39 DMP Okay. We're supposed to have had a greater than 4
 on the voltmeter for the furnace pressure. I'm
 reading 3.6 here. I'm supposed to inform you and
 stand by.

23 02 50 CC-H Understand. We're going over the hill. We under-
 stand 3.6 instead of 4.

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23 05 30 CC-H Apollo, Houston through Orroral for another 3-1/2 minutes.

23 05 35 DMP Okay, Bo. DP here again. That pressure is slowly decreasing, so maybe we're just going to have to wait until we get to the proper time on that step.

23 05 45 CC-H Roger. Just suspend furnace - -

SFE Apollo, Soyuz. How do you read me?

CC-H - - operations for now, and we'll call you back.

ACDR (I hear you excellently, Valeriy.)

23 05 52 SFE Hatches number 3 and 4 leaking.

ACDR Say again. (Repeat, please.)

SFE - - number 3 and 4 leaking.

ACDR (You have a big leak or a small one?)

23 06 18 CC-H Docking module pilot - -

23 06 19 SFE Delta-P is - -

CC-H - - Houston. You have clearance to proceed with furnace operations.

SFE - - 6 millimeters for 6 minutes.

ACDR I think it'll cool down that much in that period of time. I can't read that on my gage, Bo.

SFE ...

CMP (Valeriy, maybe you are forgetting the temperature.)

SFE No, no, no.

23 06 53 CC-H Apollo, Houston. We're getting a lot of interference with our communication. If you can turn down the speaker box, it probably would help.

CMP (... Valeriy.)

Day 198

TAG Tape 198-13/T-31
Page 3

SFE 6 millimeters for 6 minutes.

CMP (Just a little bit), huh?

SFE We must open and close the ...

23 07 29 CC-H Apollo, Houston. There is a little over a minute until LOS. We would like you to proceed with furnace operations with the current pressure. And we'll see you at Hawaii at 59:02.

23 08 15 CC-H Apollo, Houston. Did you copy my last transmission about the furnace?

23 08 50 CC-H Apollo, Houston.

23 09 05 CC-H Apollo, Houston in the blind. Would you have the Soyuz crew go to SIMPLEX AM?

SCDR Yes. (For a period of 5 minutes. Over.)

23 09 34 CC-H Apollo, Houston. Over.

23 09 47 ACDR Okay. You want to repressurize?

23 22 56 CC-H Apollo, Houston. We're AOS through Hawaii for 6 minutes. How do you read?

ACDR Okay, Bo. And we've had one problem. Let's talk about it right away.

CC-H Okay. Understand, the problem with tunnel 2. And could we go ahead and have the Soyuz go SIMPLEX AM so their guys can uplink to them through Hawaii?

ACDR Okay.

23 23 19 ACDR (Soyuz, Apollo; right now, turn on SIMPLEX AM, please.)

ACDR (Soyuz, how do you read me?)

SCDR I read you loud and clear. Just a moment.

ACDR (Moscow wants to talk to you.)

CC-H Okay, Tom. We're standing by for your status report.

ACDR Okay, Bo - Pardon me - Crip. On this one, I couldn't see any decrease in our pressure. Our rule says that if it's less than 15 millimeters for 5 minutes, it's okay. I guess they have a rule that if it's greater than 1 millimeter for 6 minutes, it isn't okay. So there's a big discrepancy between ground rules, I guess, that somebody overlooked.

CC-H We - we're aware of that, Tom, and I guess - -

SCDR (I heard you.)

CC-H We're looking at the procedure on - in your Docking Module Checklist, 8-4, where that gives the check, and we're assuming that you all have progressed there.

SCDR (Soyuz; how do you read?)

23 24 33 ACDR Right. We've already gone through it; reequalized the pressure, opened the hatch, pumped the pressure up, and equalized with them. We've had both hatches open again, and now we're doing another one.

CC-H Copy that.

ACDR But I think when you bleed the pressure down, it's going to decrease the temperature in that tunnel, then the pressure is going to fall off some more.

CMP Yeah.

CC-H We concur.

23 24 59 SCDR (Capital, Moscow.)

SCDR (Moscow, Soyuz. Do you hear us?)

SFE (Moscow, this is Soyuz. I hear you well.)

SCDR (Did you hear Soyuz?)

SCDR (I heard you beautifully.)

23 26 08 SCDR (Now, we are observing Mexico.)

SCDR (... millimeters.)

SCDR (Repeat, repeat.)

SCDR (Valve is closed now.)

23 27 30 ACDR Okay, Bo. It's the end of - of 6 minutes here, nearly. I can't see any change in ours. Of course, our gage does not have the fineness that theirs does.

23 27 42 CC-H Roger. Copy that. And we're about a minute from LOS, Tom. And next station contact is going to be Goldstone in 6 minutes. And I guess if Deke is just standing by waiting on that, we suggest that he can go ahead and press on with the furnace operations.

DMP Yes. I'm already pressing through with that now.

DMP ...

SFE (This check was already said on SIMPLEX AM.)

SFE (...)

23 28 45 CC-H Apollo, Houston. Why don't you just stand by on the hatch thing, instead of trying to repeat it if it's flunked again from the Soyuz, and we'll let it try to stabilize a little bit. We'll talk to you at Goldstone about it.

23 28 57 ACDR All right. Real good, Crip.

23 34 01 CC-H Apollo, Houston. We're AOS through Goldstone. We've got you for 3 minutes.

ACDR Okay.

CC-H Apollo, Houston. AOS through Goldstone for 3 minutes.

CMP Roger - -

ACDR Roger. Read you - -

CMP - - got you.

ACDR - - loud and clear. How us?

CC-H Loud and clear, also, now.

ACDR Okay, is Moscow still talking to them?

CC-H That's a negative, we're not configured for that right now. I guess we're - I understand that their test still was failing. Can you give us the amount of delta-P it was failing on?

ACDR Stand by. We haven't heard from them in a while.

23 34 41 ACDR (Soyuz, Apollo.)

SCDR *** ahead, Tom.

ACDR (What is pressure of hatch number 3? Over.)

23 34 51 SCDR Delta-P is 10 millimeters for 10 minutes.

ACDR I understand. (10 millimeters, 10 minutes, right?)

SCDR You are right.

CMP Rate of 1 millimeter a - -

ACDR Yeah. Evidently, they're saying 1 millimeter a minute again. I can't see any change on my gage in here, Crip.

CC-H Roger. We copy that. Our gage just doesn't have that resolution, of course.

ACDR No, we sure don't.

ACDR Why don't you relay that to Moscow. I mean, I'm sure you are, but - -

23 35 46 CC-H We'll get that word to them.

23 36 50 CC-H We'll see you in Newfoundland in 7 minutes.

ACDR Say again.

CMP Rog. 7 minutes over Newfoundland.

CC-H Rog. And just hold up on that pressure thing. We'll try to talk to you a little bit more about it there.

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Page 7

CMP Okay.

23 37 02 DMP And the furnace is running.

CC-H Copy, furnace running.

23 44 04 CC-H Apollo, Houston, we're AOS Newfoundland, and got you for a total of about an hour here. And we have coordinated with Moscow, and you're GO to continue in your procedures with the delta-P integrity check that we've had.

ACDR Okay, good. Yeah. I said, we'd better give you a call, because our CO₂'s getting up to 15. There's no problem, but we just wanted to tell you.

CC-H Copy that. Press on with it, then; get it out.

CMP Did they say what action they'll take over in Soyuz?

CC-H I guess we're - we're just going to go ahead and continue with no action right now and just keep a - keep an eye on it.

ACDR Okay, Bo. Just to reconfirm, you want us to go ahead and - and go ahead and go through our transfer back in the command module - affirmative?

CC-H That is affirmative, Tom. We want you to continue on.

23 45 17 ACDR Okay. Real good.

23 48 13 CC-H Command module, Houston. Vance, if you can, we're a little bit out of our attitude, and we want to make sure we got ATS all tied up through this evening. If you could just - do us another VERB 49 to get back on, we would appreciate it.

CMP Okay, Bo. Be glad to. Interesting, though, I don't know how we quite drifted out.

CC-H We assume that you did it during your P52 when you were in FREE.

CMP Perhaps.

Day 198

CC-H Yeah. We've - seen that occur, you know, when we were running sims down here. And it has occurred a couple of other times a little bit earlier in the mission.

CMP Okay.

23 49 42 CC-H Apollo, Houston - for the command module. Vance, if you'll go ahead and give us ACCEPT, we'll go ahead and - load your jet on monitor for you.

23 49 52 CMP Okay, you have POO and ACCEPT, Crip.

CC-H Rog. And you're squared away with what we did on your masking that ICDU problem. We're confident that this jet on monitor will - would handle any problems that really come up in your ICDU tonight.

CMP Okay, fine, and is there anything in particular I'm prohibited from doing with the computer?

CC-H That's a negative.

CMP Okay.

CC-H The only - the only thing that would reset it - would enable that failure bit again, was if you did a VERB 40 for some reason. Which we don't - there's no reason you should be doing it.

CMP That's right. Okay.

23 54 10 ACDR (... Valeriy.)

23 54 13 CC-H Apollo, Houston. Are you calling?

DMP ... Soyuz calling.

CC-H I'm sorry, Deke. If that's you, you're unreadable.

DMP Rog. That was Soyuz calling.

CC-H Sorry about that.

23 54 30 ACDR (Soyuz, Apollo. How do you read?)

ACDR (I read you well, Alexey.)

Day 198

ACDR (Speak, Soyuz.)

ACDR (Understood you.)

23 59 51 ACDR Okay, Vance. I'm going to open the equalization valve.

00 00 02 ACDR (Alexey, I hear you excellently. How me?)
 ACDR (Yes. Roger. Right now, pressure is zero, isn't
 it? I understood you.)
 DMP (Right now, we are opening hatch 2.)
00 00 53 CC-H Apollo, Houston. Tom and Deke, we hear you talking
 to Soyuz. And, I guess, for Vance, we're not hear-
 ing the downlink on relay. Did we change that con-
 figuration on panel 10 at all?
 CMP Okay, Crip. A little while ago, we were doing
 something important and that. We had an LA tower
 or somebody cutting in. So, yes, I turned it off.
 Sorry about that.
 CC-H Okay. Understand. If you don't mind turning it
 back on, we'd appreciate it.
00 01 21 CMP Okay. You got it back.
 CC-H Were they trying to clear you up for a landing
 or something?
 CMP Sounded like they were clearing somebody else.
 ACDR Yeah. Too far left.
 CMP They wouldn't ever talk to us. So we got mad and
 shut them off.
 CC-H Well, that'll teach them.
00 01 40 ACDR Okay. Hatch 2 is open, Crip.
 CC-H Rog, Tom. Very good.
00 01 51 ACDR (Soyuz, Apollo. Hatch 2 is open.)

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Page 11

SCDR ... 2 is open. *** to do, Tom?

00 02 11 CMP (Repeat, please, Alexey.)

SCDR What did you say?

00 02 21 CMP (What did you say?)

SCDR Ask him, what is he going to do?

00 02 34 ACDR (Right now, we are crossing over.)

CMP (Tom wants to sleep.)

SCDR It is a good idea.

00 02 55 CC-H I imagine you guys are getting a little bit tuckered by now.

CMP Oh, just somewhere in the middle to a little bit tuckered, yeah.

CC-H Well, we hope that you can get it squared away and get to bed here pretty quick. Incidentally, next time somebody's up in that vicinity, we'd appreciate another delta-P reading on hatch 3.

00 03 30 CMP Okay. That's in work.

CC-H Okay. I'm sorry. I didn't want to make anybody make a special trip.

00 03 43 DMP Okay, Crip. We're back on the air here, and I'm reading about a - as close to zero as you can read.

CC-H Okay. Very good. Thank you, Deke.

DMP Roger.

00 04 10 DMP Okay. And, Crip, I've completed step 54 here, and went through 55 earlier, and I'm kicking off on 56 now.

00 04 27 CC-H Okay, Deke. Real fine.

CMP Crip, for a first timer, it sure is interesting to see how easily you can lose things up here. I've lost my spoon twice now and I was really worried about it, and each time I saw it flying by just a little bit later. So, it seems you don't lose things permanently.

CC-H Well, that's good to hear. I imagine there's probably plenty of places for them to get lost. Unfortunately, we don't have that little screen like we had back on Skylab to collect things there.

CMP That's right.

CC-H Vance, talking about atmosphere a little bit, can you tell us when you got the LiOH can in today?

CMP We put one in first thing this morning.

CC-H Okay.

CMP And we haven't done anything since.

CC-H Yeah. You'll notice that a little bit later, you got one scheduled for this evening, too.

ACDR ...

00 06 29 CMP Okay. I guess we - we'll have to check that.

00 08 14 ACDR Crip, how do you read back - me back in the command module?

CC-H We're reading you loud and clear now, Tom.

00 08 19 ACDR All right.

00 11 51 CC-H Apollo, Houston. We've finished with the computer, and you can go ahead and go back to BLOCK, and you can go ahead and give us that E-memory dump anytime now - anytime you're ready.

00 13 18 ACDR Houston, Apollo. Do you read? Over.

CC-H Loud and clear, Tom. Go ahead.

ACDR Are you reading Vance?

Day 199

CC-H Negative. I'm reading you loud and clear, but I have not heard Vance call.

00 13 36 ACDR Okay. Here comes the VERB 74, Crip.

CC-H Okeydoke.

00 19 09 CC-H Apollo, Houston. We show that you're still in ACCEPT. You can go back to BLOCK on the computer. And, Tom, if you got a few minutes, we'd like to talk to you about where you are this evening as far as getting to bed and about getting up in the morning.

ACDR Okay, go ahead.

CC-H Okay, had a little squeal there on the - coming through the squawk box. The - I guess it looks to us like you're probably pretty close to an hour away from getting to bed, and that's going to make wakeup come - come kind of early in the morning. Do you still feel like you want the call as we previously talked about it, to get you up on time? Are you interested in - -

ACDR Stand by.

CMP How early was that, Crip? We're discussing it; we forgot.

CC-H Okay. 66:40 is when we were going to give you a ca - call. That's about 6 hours and 40 minutes from now.

00 20 28 ACDR Well, I think we can keep pressing on. We'll try to keep pressing on the same Flight Plan then.

CC-H Okay; your option. Men of steel.

00 21 42 CC-H Apollo, Houston. We've still got about 20 minutes of this ATS pass and a little bit of Orroral Valley. And, Tom, we had - understand your concern about keeping everything on time. You might continue to think about it. If you change your mind before we go LOS here, well, just let us know.

00 22 03 ACDR All right, Crip.

END OF TAPE

Day 199

TAG Tape 199-01/T-32

Time: 199:00:30 to 199:02:00

Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

00 34 36 CC-H Apollo, Houston. You gents have time to chat about a few more items before I say good night to you?

ACDR Go ahead.

CC-H Okay, Tom. Just to make us feel comfortable with the tunnel 2 situation, we would be interested in getting a - one more delta-P reading, if we could, off of hatch 3. I would like to also tell you that with that problem we've had with the ducer in O₂ tank 2 there is a potential that you might end up getting a CRYO PRESS C&W tonight. That - your option as to whether you want to turn off the speaker box and put a guy on a headset for the evening, but - whatever way you feel comfortable. We don't think it is probable but it is possible. Also, one other item, I don't know whether you worked it in or not, but if Vance did get a height measurement, we'd be interested in it just for recordkeeping purposes.

00 35 41 ACDR Okay, the thing was ..., and the answer ...

CC-H I'm sorry, Tom. I could not read you.

ACDR Okay. We didn't get it in the time line.

CC-H Okay. I understand we did not get the height measurement.

ACDR Negative. We'll get you some more stuff later on. We're going to go to bed.

00 36 02 CC-H Okay. I'm going to go ahead and say - -

END OF TAPE

Day 199

TAG Tape 199-02/T-33

Time: 199:02:00 to 199:03:03

Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

REST PERIOD - NO COMMUNICATIONS

PRECEDING PAGE BLANK NOT FILMED

Day 199

TAG Tape 199-03/T-34
Time: 199:06:26 to 199:07:30
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

06 55 39 SCDR (Moscow, Moscow, this is Soyuz. How do you read me?
Over.)

06 56 02 SCDR (Moscow, this is Soyuz. How do you read?)

06 56 37 SCDR (Moscow, Moscow, this is Soyuz. How do you read?)

06 56 55 SCDR (Moscow, this is Soyuz. I read you poorly, with
interference.)

06 57 03 SCDR (Moscow, Soyuz. How do you read?)

06 57 13 CC-M (I read you well. Good morning.)

SCDR (We've had enough sleep, enough rest. We're working
now.)

SCDR (... Once we got 10 millimeters it remained on that
level. The DV pressure is 190. The total pressure
is ...)

CC-M (We know the reason, and our recommendation ...)

(Music: Midnight in Moscow)

06 59 10 USSR (On the line.)

SCDR (What other forms do you have?)

CC-M (I think we should check the time and correct the
gyro position.)

07 00 26 USSR (Right away. Over.)

07 00 38 CC-H Good morning, Apollo. We are with you through the
end of an ATS pass. We're about to go LOS. Our
next station contact will be Santiago in 41 minutes.
I know it's kind of early to start a day, but, might
as well get up and get with it. Incidentally, we're
not positive whether you guys chlorinated your water
last night. If you did, you left the potable water
valve closed, and it would be kind of potent if you
took a drink out of it.

07 01 07 DMP It would be what, Crip?

CC-H Be kind of strong if you took a drink out of it.
So if you did - if you did chlorinate, you better
open up the potable water valve for a while before
you - before you take anything to drink. If you
didn't, you're probably going to need to chlorinate
it before drinking out of it.

DMP Okay, stand by. We'll check that.

07 01 26 CC-H Okay. That is something that Vance would probably
normally do in the presleep checklist. That's where
it's called out, and we're just not sure whether you
did it or not.

07 01 38 ACDR Hey, Vance?

END OF TAPE

Day 199

TAG Tape 199-04/T-35
Time: 199:07:30 to 199:09:00
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

07 41 36 CC-H Apollo, Houston. We are AOS through Santiago. It's a real short pass. About a minute and a half.

DMP Okay, Crip. We're with you.

CC-H Roger. For that upcoming pass, we've got - I've got a new stop time for the camera, if somebody wants to note it down.

DMP Please stand by just a minute. ... see my

CC-H That's on the rev 39.

07 42 37 DMP Okay, Crip. Go ahead.

CC-H Okay. The start time is the same. The stop time is now 68:04:10. And we're about 30 seconds from LOS. We'll have you again when you lock on the ATS. And we should be able to get you at about 67:39.

DMP 67:39.

07 43 03 CC-H Roger. That's about 16 minutes.

07 55 55 CC-H Apollo, Houston. We're talking at you through the ATS. Should have you about 40 minutes.

08 01 37 CC-H Apollo, Houston. We're talking at you through the ATS. Got you for about 33 minutes.

DMP Okay, Crip. We prepared breakfast here, and I'm just coming up on the first Earth obs pass, and the mapping camera is running, and we're waiting to see something.

CC-H Very good. Coming up on the tip of Africa right now looks like.

DMP That's affirm. We're still over the water.

08 05 18 CC-H Apollo, Houston. We'd be interested in finding out what the status of the POTABLE INLET valve is, whether it is open or closed, and what went on regarding chlorination, if you can help us out, please.

CMP Okay. Good morning, Crip. Give you some words on the water.

CC-H Okay, Vance, we'd appreciate it.

CMP Okay. I chlorinated last night, and per the procedure had the POTABLE INLET valve OPEN. And afterwards closed it because I supposed you still wanted to be filling up the waste tank. I had a drink about 10 minutes after I chlorinated that didn't taste too bad. And I've been drinking it quite a bit this morning and - tastes great. The valve is still closed, but I'll try to get through the junk to open it if you want it.

08 06 54 CC-H Okay, Vance, we'd like to go ahead and have it OPEN. And the reason we call for it, is that we've had some problems in the past with - with that thing closed, and not getting good circulation through there, and giving you a pretty good blast of chlorine. That was why we alerted you to it.

CMP Okay.

08 07 50 CC-H Apollo, Houston. I am going to need to get some updates to today's activities to you, primarily regarding the furnace, and the fact that we got the sample in there a little bit late, and we're going to have to modify how we handle the sample as far as cooling it down. And I was trying to do it, if I could, without interfering with Deke's pass coming across here. You guys help me out there, when you think you might be able to copy some of it down, without interfering with your breakfast.

CMP Okay, why don't you let us wait a little while. We're getting a little tied up here.

08 08 25 CC-H Okay, fine.

08 11 46 ACDR Hello, Houston; Apollo.

CC-H Good morning, Tom. Go ahead.

ACDR Well, we're doing a bunch of things at one time here, but let me give you the crew status report.

Day 199

TAG Tape 199-04/T-35
Page 3

CC-H Oh, we'd appreciate hearing that.

ACDR First of all, we're still very much alive and healthy. Feel in great shape, but to the more mundane things. Ready to copy?

CC-H Yes, sir. Shoot it at us.

08 12 26 ACDR All right. For yesterday: I ate all my breakfast. For meal 2, there wasn't much time and we used a snack, and that's all there was - had jerky, apricots, and orange-pineapple juice for meal 2. For the third meal over in Soyuz, it was like at Tashkent; ate everything in sight.

CC-H Brave man. How were the ears?

ACDR Roger. (Laughter)

ACDR Okay, I had 5 hours of good sleep. I had three Lomotils, just as a prophylactic mode. And I'm full up to my ears with fluid. And my dosimeter - same as the day I launched - 11001. Okay, for the CP. Ate everything for breakfast. He had the same kind of snack for the second meal; he had an orange-pineapple drink, jerky, and apricots. And for the evening meal, he had everything but the romaine soup. 5 hours of good sleep. He had two Lomotils - same mode, just a preventive. Estimates 90 seconds of fluid. PRD reading, 48107. For the DP, ready to copy?

08 14 32 CC-H Yes, sir.

ACDR Okay, he had everything for breakfast plus two orange drinks - orange-pineapple drinks. For - he had the same thing for lunch, apricots, jerky, and an orange-pineapple drink. Evening meal was over in Soyuz, with everything. Okay, his PRD reading is 61004. 5 hours of - 5 hours of excellent sleep, two Lomo's in a preventive mode, and estimates 20 gulps.

CC-H Tom, Surgeon would appreciate knowing when you took the Lomotil and also they - doesn't really recommend taking it prophylactically.

ACDR Yeah, we all had them before we went to bed last night, but what was the last comment?

08 16 31 CC-H Under - understand you took them before you went to bed, was that right?

ACDR That's right.

CC-H Okay, and Surgeon was just saying that - that he did not really recommend taking them prophylactically.

ACDR Yeah, well he's not up here 100 miles above the Earth jammed full in a spacecraft and having to meet a tight time line either. He can just walk out to the potty, where we can't.

CC-H Rog.

08 17 11 CC-H Okay, we got all the report there. Appreciate it. We did a little bit of research regarding some of the food problems you people had had locating some of this stuff. And we think it may have occurred because all of it was not tied together for the stuff that we've got in B-1 there, but it all - all should have been packaged in. You'll probably find it when you - as you're going through and using, the next couple of days. I believe tomorrow's the last - correction, I believe today's the last day that you'll be eating out of that particular locker.

08 17 46 ACDR Yeah.

08 21 45 CC-H Apollo, Houston. I - in looking at the Flight Plan here, I know that Deke's busy there with the mapping pass on the orb science thing, but we need to, if we can, go ahead and get that BATTERY Bravo on CHARGE. If somebody has got time to - to go ahead and put it on CHARGE, we'd appreciate it.

ACDR Crip, that just amplified more about my previous comments. With drogues and probes in here, and one person on the center couch, you can't even move to one side to the other here.

08 22 25 CC-H Okay, we copy that. Fine.

08 27 47 CC-M (- - this is Moscow.)

Day 199

TAG Tape 199-04/T-35
Page 5

CC-M (Soyuz, this is Moscow.)

CC-M (Soyuz. Soyuz. This is Moscow.)

CC-M (Soyuz. This is Moscow.)

08 28 49 SCDR (Moscow, Soyuz. I hear you well. How do you read me?)

CC-M (I hear you well.)

SCDR (We were just eating breakfast. That's why we do not answer.)

CC-M (Sorry for the interruption.)

SCDR (That's okay. Now we're ready to work.)

CC-M (We will give you a radiogram. Pad 2. Write down the times, please, of TV report. And then you can continue preparations for this TV report.)

CC-M (Have a chance to eat yet?)

SCDR (No. But that's all right. Don't worry about it. We've checked the systems. Everything is normal.)

CC-M (Everything shipshape?)

SCDR (We're acclimated to this as though we have been living for quite a long time.)

CC-M (Okay. Roger.)

SCDR (Okay.)

CC-M (Pad 2, number 15, longitude 208.88.89. Orbit 046.4. Time of burn 11:51.39. How did you read me?)

USSR (Longitude 208.88.89. 046.6, 11:51.39.)

CC-M (Correct. The time will be of the burn 9 - 92:11 to 32. That means you have 1 more minute left. Next comm session is 12:51 to 13:14 Moscow. 13:30 to 13:35 through Vanguard. That's a reserve comm session.)

CC-M (Soyuz, this is Moscow. We can see you on the TV screen. Are you about ready?)

SFE (Good morning, my respected viewers. The Soyuz spacecraft, which we are on, has been in orbit around the Earth for 3 days. Yesterday was a very special day for us onboard ship. We were the hosts to the American crew, and had the first international such reception. American astronauts Tom Stafford and Deke Slayton opened the hatch on time and we were able to meet them, to be the first to greet them, shake their hands at the border between the Soyuz and Apollo - -

08 34 06 CC-H Apollo, Houston. We're going over the hill; Hawaii at 13 minutes. 68:28. 68:28.

SFE (- - because of this - -

08 34 16 ACDR Okay, Bob.

SFE (- - finished preparation in space. Everything went well, especially the minutes preceding the docking. We had very smooth docking - self docking. We did everything, completed everything, the initial part of the joint training - joint activities. We gave you a short TV report regarding this first meeting. This was very exciting moment for both cosmonauts and astronauts. These minutes flew by very rapidly. We exchanged the experiments, various other hardware, that are necessary to perform joint experiments, joint activities. We had to spend a little bit more time than we anticipated. We fell behind schedule a little bit. Alexey did tell you that this was exciting mission - exciting greeting for us and I concur him. This was a meeting which emphasized the good will of our people - -)

08 48 29 CC-H Apollo, Houston talking at you through Hawaii for 5 minutes.

CC-H Apollo, Houston. We see that you have got the BATTERY on CHARGE. It'd help us out a little bit if you could give us a rough time when you turned it on.

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TAG Tape 199-04/T-35
Page 7

CC-H Apollo, Houston. How do you read?

CC-H Apollo, Houston. How do you read?

DMP How do you read us, Crip?

08 50 06 CC-H Okay. We're with you now, and we see the BATTERY Bravo is on the - on the line charging. It would help us out here in keeping the status up, if you could tell us about when you turned it on.

DMP Well, I guess about 10 minutes ago. I had to leave that Earth obs to come over here and get with it.

CC-H Copy that. I need to - to pass on to Tom, here, in his upcoming transfer, we've got called out in his procedures to do a helium inject at 10 minutes on his transfer time. And we want to delete that because we got the furnace sample started a little bit late yesterday.

DMP Delete the helium inject.

ACDR Okay. No helium inject.

CC-H Yeah. Tom, if you wanted to, I could make those changes in your transfer procedures. We're going to pick it up - what we're going to do is do it a little bit later.

08 52 13 CC-H Apollo, Houston. Stand by 1.

CC-H Apollo, Houston. The battery charge current looks a little bit low, and we haven't saw Bravo come up. Deke, we'd appreciate it if you'd verify for us on panel 5 that you got the BATTERY RELAY BUS BAT Bravo circuit breaker OPEN.

DMP Yeah, it's OPEN.

CC-H Okay. Thank you.

DMP I can tell you, the reason you weren't seeing it, though, because I'd switched it over to C instead of Bravo.

C-4
TAG Tape 199-04/T-35
Page 8

Day 199

08 53 04 CC-H We're going over the hill. We'll - see you at
65:58 on the ATS.

END OF TAPE

Day 199

TAG Tape 199-05/T-36
Time: 199:09:00 to 199:10:30
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

09 18 18 USA How do you read?

09 18 49 DMP (Alexey.)

SCDR (...)

DMP (Thank you.)

CC-H Apollo, Houston. Good morning.

CMP Good morning, Bo. How are you?

CC-H Just fine. I have a couple of notes. Can you listen for a second?

CMP Sure. Go ahead.

CC-H Okay. We believe the speaker boxes are causing a comm squeal, and we would ask that you keep the speaker boxes in the command module and the DM turned full down when possible.

CMP Okay.

CC-H And we're convinced the integrity check problem last night with tunnel 2 was thermal, and the Soyuz will increase their tolerance to 10 millimeters.

ACDR Rog. That's what we said it was at first onboard here, I think.

CC-H Roger.

CC-H And I have two notes for the DP, if he's ready.

CMP He'll be on comm in just a second, Bo.

CC-H Okay.

ACDR And, Bo; Vance and I are in the docking module right now.

CC-H Roger. Did the clock sync go on schedule?

ACDR That's affirm. It was on schedule, and we're working on - just up to step 7.

CC-H Understand; step 7.

CMP And we're - we're coming up to 17 minutes.

09 20 32 CMP MARK it.

CC-H Roger.

ACDR Hey, Bo. One thing for the thermal people. Last night in our sleep condition, we only had one set of hoses coming up to the DM. We had two down in the CM, and it seemed to work out lots better.

CC-H Understand.

DMP Okay, Bo. This is the DP...

CC-H Roger. The first is, in the Flight Plan, delete the waste water dump at 69:35.

DMP Okay. Got that, Bo.

CC-H Okay. And the other is, on rev 40 for orbital science, the stop time is now 69:30:50.

DMP 69:30:50.

CC-H Roger. That was the stop time for M5 on rev 40.

09 22 29 USSR This is Salyut station.

DMP Okay.

CC-H And that's it. Thank you.

ACDR Roger, Bo. Understand that. Also, Bo, you said to omit the multipurpose furnace helium injection at - on the third step there and we were not - we omitted the helium injection. We're just standing by for your instructions.

09 22 56 CC-H Roger. When you have a chance, I'll give you an update to your Docking Module Checklist and tell you where to put that helium injection in.

ACDR Okay. We're standing by.

CC-H Okay. On step number 20 that occurs at approximately 1 hour and 12 minutes time -

ACDR Okay. I'm there.

CC-H Okay. On the bottom of the page, at about 1 hour and 14 minutes, perform multipurpose furnace helium injection procedures for MA150 AS-3, page docking Module 7-5.

ACDR What was the experiment number?

CC-H MA150.

ACDR Okay. Perform helium injection MA150 on page 7-5.

CC-H Roger. And we still have been having some problem with our helium, and we ask that when you do those injections, you make sure that all of the valves are tight and you make sure that those two valves down in 880 are closed tightly as well.

09 24 20 ACDR Roger. Understand.

CC-H And if we still have some problem, we'll probably have you do an air injection, but that will be later.

ACDR Understand, Bo.

09 24 42 ACDR Okay, Bo. And on to this, I guess I'll be doing the helium injection. Looking at the - since I'll be the one in here at that time, I'll take care of that.

CC-H Roger; sir. That is for you.

ACDR All ready. It looks like we're clicking away on schedule.

CC-H Okay. And if you still have a second, on D/4-2 - -

09 25 31 CC-H Apollo, Houston. Do you read?

09 26 59 USSR (...)

ACDR Hello, So - Soyuz; Apol - Apollo. (How do you read?)

Day 199

SCDR 5 by 5, Tom.

ACDR Roger. (I read you, too.)

09 27 16 ACDR Hello, Houston; Apollo. How do you read?

CC-H We read you now very well.

ACDR Okay, Bo. You just dropped out completely there.
We are on page 4-2 waiting for your instructions.

CC-H Okay. On 4-2, we were going to have you eliminate
the step that starts, "AC perform furnace shutdown"
and those other items which refer to the MA150 car-
tridge - cartridges being put in the bag. So where
it says, "Obtain MA150 cartridge bag," delete it
and "Put it in the bag," delete it, and the access
portion, those things, delete it. We may add an
air injection there, and we will have the MA150
samples removed a little later.

ACDR Okay. So in other words, we'll just be - I under-
stand, when I inject the helium to the 150 but do
the cool-down time. We just won't take it out then
and deactivate it.

CC-H Roger. Now I'll let you know about that later.

09 28 20 ACDR Okay. Real fine. Thank you.

09 28 25 CMP How did the Earth obs go, Deke? Good? How did the
Earth obs go? Pretty good?

09 28 32 CC-H Command module, Houston.

CMP Go ahead, Bo.

CC-H Sir, on pa - on 181, we would like you to check that
the TV POWER switches are ON. The three switches.

CMP You'll just have to stand by there a minute, Bo.
This is a ...

CC-H Okay.

CMP If you think it was bad on the ground, you ought to
see it up here. Let me get the attitude here and
look ...

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09 31 17 SCDR Apollo, Soyuz. What steps are you doing now?
ACDR (Now we are working at Vance, speak further.)
CMP Deke, do you read us?
DMP Yeah, I'm reading you guys.

09 32 44 CC-H Command module, Houston.
CMP Go ahead, Bo.
CC-H Sir. Could you give us a call when you have those switches on 181, and we'd like to check that the CM camera is in MASTER.

09 33 01 CMP Okay. The three POWER switches on 181 were just turned on, Bo.
CC-H Thank you.
ACDR Stand by for MASTER.
CC-H And we're going to TV now.

09 34 01 CC-H Command module, Houston. Can you verify that the command module camera is in MASTER?
ACDR It's in MASTER.
CC-H Thank you.
ACDR (Soyuz, Apollo. We are now starting pressurization in docking module.)
USSR ...
CMP Okay, she's in MASTER, Bo.
CC-H Thank you.
DMP Okay.
ACDR Okay, Deke. We're pressurized.

09 35 41 ACDR Okay, Bo. We're pressurizing the docking module, in case you didn't hear us.

CC-H Roger, understand. And we still have a squeal, and we think that it may be the Soyuz speaker box. Could you ask them to turn off their speaker box?

09 36 26 CMP (Soyuz, Apollo.)

SFE Go ahead.

CMP (Please switch off our speaker box in the orbital module.)

USSR (...)

USSR (Turn it off.)

CMP (Do you understand?)

DMP (Soyuz, Apollo. Right now I'm in the docking module. Pressure 490 millimeters mercury. Over.)

CMP Okay, attitude, pressure ...

09 37 47 CC-H And, docking module, Houston. Just for your information, we have a good picture of you in the DM.

ACDR Roger. We're doing a pressure integrity check here, Bo.

CC-H Roger.

ACDR (Hello, I think that it is very early ...)

USSR (...)

DMP We don't see you on the screen now.

SFE What about now?

DMP (We are now working at it...)

CMP Are you still getting that squeal, Houston?

CC-H Apollo, we're still getting the squeal.

CMP Okay, we asked them to turn off the box, and I think - -

DMP Want us to turn this one off in here?

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CMP - - and I think Valeriy indicated that they've done that.

CC-H Seems better, now.

ACDR Bo, do you want us to turn off - let me turn off the speaker box here in the docking module.

CC-H Apollo, Houston. It sounds better now.

ACDR Okay, how do you read now? Is that better?

CC-H Roger. That's better now.

ACDR Say again, Bo.

CC-H It is better.

ACDR Okay, we just turned off the speaker box in the docking module.

09 39 20 CC-H Roger.

DMP Just for your information, the volume was all the way down on the speaker box, but it takes turning the switch off to really kill that noise.

09 39 49 DMP The fish look healthy this morning, Bo.

CC-H The fish do, huh?

DMP Yeah, we have them over here on the wall. They're swimming around happily.

09 40 06 ACDR (We have a lot of fish, yes, Bo?)

CC-H (A lot of fish, yes.)

DMP (Laughter)

CC-H Was the fish experiment done on day 2? Could you tell us that?

ACDR It sure was. I shot all kinds of pictures of those little rascals, but that was done down in the command module.

CC-H Understand. And we'd like you to try that speaker box on in the docking module, but leave the volume all the way down, and let's see how that works for just a few minutes.

DMP That's just the way it was, but we can do that, yes.

CMP Okay.

DMP Okay. You're in that configuration now with the speaker box.

CC-H That still sounds good.

09 41 04 ACDR (Good.)

09 42 09 DMP (Soyuz, ...)

ACDR (Soyuz, our step 9 is completed. Over.)

SFE Roger. Step number 8 is completed.

ACDR (We have also completed 9.)

SFE Turn on to pressure equalize.

ACDR (Roger.)

CMP (Valeriy, the partial oxygen pressure is 180, and the partial pressure of carbon dioxide is 4.)

09 43 23 CC-H Docking module, Houston.

CMP Go ahead.

CC-H The camera on 873 is picking up some of the lights. We ask that you tilt it down a bit.

CC-H Roger. That looks better.

DMP Rog.

SCDR ... opening hatch number 4.

ACDR (Roger.)

CMP Okay. 42.

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09 45 02 CC-H Docking module, Houston. Can you verify that Soyuz turned their speaker box off?

CMP Valeriy, Vance. (Is your speaker box turned off?)

09 45 22 SFE (Yes.)

CMP Bo, he answered that he did.

CC-H Roger.

09 45 33 SFE Number 4 is open.

ACDR Roger.

DMP (Hatch 4, OPEN.)

USA ... equalize.

DMP (I am equalizing the pressure between the docking module and Soyuz.)

USA (I just completed ...)

09 46 35 ACDR (Soyuz, Apollo. Please prepare Apollo TV camera. Over.)

ACDR (Turn on Apollo TV camera, please.)

CMP Okay if we go with camera 6 to Soyuz?

ACDR Take camera 6 to Soyuz.

CMP ...

ACDR Yeah, about 3 5.

USA ...

SFE Apollo TV camera, ON.

09 48 13 ACDR (Roger.)

CC-H Command module, Houston.

ACDR Go ahead, Bo.

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CC-H We've been having trouble with our TV. Could you confirm that - that you've selected SLAVE on the CM TV camera?

09 48 46 ACDR That's affirm. We just did that ...

CC-H Thank you.

ACDR (... I am opening hatch 3.)

CMP Is the TV okay now, Bo?

CC-H Roger. We hear you.

CMP Rog. Is your TV okay now?

CC-H The TV is okay now.

CMP Good.

09 50 14 CC-H If you gentlemen can move aside a bit, we'll be able to see better.

09 53 31 ACDR Okay, Bo. I'm transferring the TSB into Soyuz. We're working on step 16.

CC-H Roger, Tom. We see you.

09 53 57 CMP-OM Okay, Tom. Do you read?

ACDR-DM Read you loud and clear, Vance.

CMP-OM Okay, we're in the orbital module and ... on comm here.

ACDR-DM Okay. (Step 16 carried out.)

ACDR-DM Looks like a bunch of snakes in there, Valeriy.

DMP-CM Okay, I'm starting fuel cell purge, and don't worry about *** warning lights.

SFE-DV (Yes.)

USA (...)

USSR (Laughter)

09 54 55 SCDR-OM Valeriy, but I am going to go to Apollo spacecraft.
SFE-DV (Yes, yes.) (Laughter)
SCDR-OM That is right.
USA (Yes.)
ACDR-DM (Valeriy, ... nitrogen.)
SCDR-OM Going to go.
USA Okay.
ACDR-DM (... nitrogen.)
ACDR-DM (Nitrogen.)
USSR ...
SFE-DV To take you from this -
SCDR-OM Everything is okay.

09 55 30 DMP-CM Okay, Bo. We're working on 56 and Valeriy's determining if he needs any nitrogen down there.
SCDR-OM How does method for our change work?
CC-H Roger.
SCDR-OM I can make you present. Okay?
DMP-CM Houston, CM. Would you say we're about over ...?
CC-M (Soyuz, Soyuz, this is Moscow.)
SFE-DV (Moscow, this is Soyuz. Read you excellently.)
CC-H Command module, Houston - -
SFE-DV Roger.
CC-H - - you look like you're ... little north of there by now.
CC-M (Moscow, we must transmit several radiograms. I am watching the TV screen. The picture is good.)

SCDR-OM (Vance Brand, Valeriy Kubasov, and I are onboard.
In a few seconds, I will transfer to Apollo space-
craft. The hatches are open.)

CMP-OM (Moscow, good morning. This is Vance Brand.)

CC-M Good morning, Vance. We are glad to meet you in the
Soyuz spacecraft.

CMP-OM (I am also very glad to be here.)

ACDR-DM (Moscow, Stafford in the docking module. Who will
speak today?)

09 57 21 CC-M Good morning.

ACDR-DM (Johnny, is it Johnny?)

CC-M Yes.

ACDR-DM (Good morning. Well, good afternoon in your view.)

CC-M Time in Moscow, 1 hour ...

USSR (This is Soyuz. We are ready.)

CC-M (This is Moscow. We ask you to close the OM and ...
window curtains when carrying out TV reports, except
TV10-4, for a high illumination level.)

USSR (Received.)

CC-M (Write it down, please.)

DMP-CM Houston, this is the CM.

CC-H Go ahead.

09 58 34 DMP-CM Yeah. I think our O₂ FLOW gage is ...***

CC-H Say again, please. We didn't understand you.

DMP-CM ...***

SFE-DV (Wait, wait.)

SCDR-OM (One moment.)

SFE-DV (Wait.)

SCDR-OM (One moment, one moment. The flight engineer must write down as I am leaving. He will take care of it.)

SFE-DV (Moscow, this is Soyuz 2. I am ready.)

SFE-DV (... Soyuz, ...)

USSR (...)

SFE-DV (... Soyuz.)

USSR (...)

SFE-DV (... I am writing down. Repeat again. A little slower, or I cannot follow you.)

SFE-DV (To connect TV2-7, TV10-2; to connect -)

SFE-DV (To connect the connectors? This is Soyuz, Moscow, this Soyuz 2. How do you read me?)

SFE-DV (Connectors or US connector. If so; then with what?)

SFE-DV (Moscow, this is Soyuz 2. I don't read you.)

10 02 26 SFE-DV (Moscow, this is Soyuz 2. I don't read you. US connector ... 47-9.)

ACDR-DM (Okay. 30 millimeters.)

ACDR-DM Okay, Bo. We need 30 millimeters of nitrogen, and I'll be adding it shortly.

SFE-DV (TK-1.)

10 03 10 CC-H Roger. We understand. You need 30 millimeters.

SFE-DV (... to connect.)

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SCDR-DM (You mean, connect the connector 347-10-1 to the connector 347-10. Like that, right?)

ACDR-DM Okay. (I am now increasing nitrogen pressure.)

SCDR-OM (... Apollo, I will find it immediately.)

CMP-OM Step 20.

SFE-DV (Moscow, this is Soyuz. Why did the TK-1 picture disappear?)

CMP-OM (Enough.)

ACDR-DM (Okay, I added 30 millimeters of nitrogen.)

SFE-DV (Moscow, this is Soyuz 2. Have you anything more or not?)

USSR (...)

SFE-DV (Well, right now we have work on transfer operations.)

10 05 36 ACDR-DM Hey, Bo. How do you read?

CC-H Go ahead. We read you loud and clear.

ACDR-DM Okay. I see you on *** here. Alexey just gave me a present. Do you know who it is?

10 05 47 CC-H It looks like you.

ACDR-DM (Thank you, Alexey, thank you very much.)

MCC-M (10 millimeters in 6 minutes.)

ACDR-DM I'll have to add a little more hair to it, though, Bo.

CC-H Roger. We have about a minute and a half until ATS LOS. And we'll see you at Hawaii at ...

SCDR-OM (... 10 millimeters. Roger; 10 millimeters.)

10 06 21 ACDR-DM Roger. And Alexey's getting ready to transfer into the ... into the docking module; step 19.

10 06 27 CC-H Roger. Understand.

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10 07 29 MCC-M (... Soyuz, ... let the cables go and they are floating. Right now they are leaving. We must say goodbye to them.)

10 07 38 MCC-M (Goodby, Alexey. I'll see you in 5 hours.)

10 21 23 CC-H Apollo, Houston through Hawaii for less than a minute. Standing by.

ACDR-DM Okay, Bo. Look, I'm in here in the docking module with Alexey. He's got his headset on - on the Soyuz - you know, J-box. And he doesn't have any intercom. I don't hesitate, though, as far as taking him on over into the docking module [sic]. But he can't read me.

CC-H Understand. He can't read you on intercom.

ACDR-DM That's affirmative.

CC-H Apollo, Houston. I take it you're - you're just planning to press on.

ACDR-DM That's right. No use just staying here. We can talk and understand each other real well. There's no problem. He just doesn't have any intercom. But we can talk real well together. I've got his volume full increased. I've got his microphone power on. And I don't know of anything else to do. I've checked all the connections. The connections are tight.

10 22 28 CC-H Roger. Understand.

10 22 33 ACDR-DM And - I've got the volumes full up. The microphone is on. He's also - We got his TV camera hooked up. The TV power is on. But - no dice as far as intercom. So we're going to press right on. We'll work it out some - once we get down in the command module.

CC-H Understand. And we're about a minute - or less than a minute - from LOS. And we'll see you at Vanguard at 70:10, which is about 7 minutes from now.

ACDR-DM Okay. I'm going ahead and go through that helium inject that you told me to.

10 23 08 CC-H Roger.

10 24 52 DMP-CM (Soyuz, this is Apollo.)

CMP-OM Deke, we read you loud and ...

DMP-CM Okay. They're ready to do the solar orientation.

CMP-OM Say again.

10 25 04 DMP-CM Ready to do the solar ...

END OF TAPE

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TAG Tape 199-06/T-37
Time: 199:10:30 to 199:12:00
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

10 30 39 ACDR-DM Okay. (Hatch 3 is closed.)
CMP-OM (Yes, Tom.)
10 30 48 ACDR-DM Okay. Our hatch is closed here.
CC-H Apollo, Houston through Vanguard for 5 minutes.
ACDR-DM Okay, Vance. Let me tell you - Bo, pardon me. Let me tell you where we're at. We're on step 23. I've just closed hatch 3 and closed the EQUALIZATION VALVE. Alexey does not have any intercom, so we're going to press right on. I can talk to him in here real well. No problem.
CC-H Roger. Does he have any communications with the Soyuz?
ACDR-DM Yeah, he can read Soyuz okay. But he can't talk.
10 31 27 SCDR-DM (...)
CC-H Understand. He can read, but he cannot talk.
ACDR-DM He's trying to call you now.
CC-H And, Apollo commander, Houston. Can the Soyuz commander read you?
CMP-OM Yes. (In the docking module.)
ACDR-DM Oh yeah, yeah, yeah. He can - he can read us real good.
ACDR-DM Vance, transmit to Alexey, will you?
CMP-OM (Alexey - -)
ACDR-DM Read him?
CMP-OM (Do you read me?)

10 32 24 CC-H Understand. It sounds like a mike problem then, huh?

10 32 26 SFE-OM Number 4, closed.

ACDR-DM Yeah. And I've checked - his mikes are close to his mouth. And I've checked the switch and all that. We're going to press right on this transfer. We may give him a different headset over in the command module.

CC-H Understand.

CMP-OM (Tom, our hatch 4 is closed.)

ACDR-DM Okay. (Read you, Vance.) And, okay. And (we are ready for pressure dump from tunnel 2.)

CMP-OM (Wait a minute.)

ACDR-DM (Current strength is 24.)

SCDR-DM ***2, 1 minute.

10 33 14 ACDR-DM Okay, Bo. I'm ready to depressurize tunnel 2. And I'm waiting on them, when they give me the GO.

CC-H Understand.

ACDR-DM Just tell me when you're ready over there, Vance. I'm waiting.

SFE-DV Apollo, Soyuz ready for depressurization from tunnel 2.

ACDR-DM (We read you.)

SFE-DV Tunnel 2.

10 34 10 ACDR-DM (We read you; we read you. I'm beginning the depressurization of tunnel 2.)

10 34 23 ACDR-DM Starting tunnel 2 depressurization.

CC-H We copy.

CC-M (We are reading the dump of pressure - on the gage.)

CC-H Apollo, Houston. There is 1 minute until LOS. We'll see you at ATS, at 70:30. That's about 15 minutes from now.

ACDR-DM Roger. 70:30.

CMP-OM See you there.

10 35 20 ACDR-DM Okay, Vance. I've vented 200 millimeters.

CMP-OM Roger.

10 35 45 ACDR-DM ...

ACDR-DM ...

10 35 58 ACDR-DM Okay, coming up on 270. Close it. ...

10 35 59 CMP-OM Okay.

10 51 58 CC-H Apollo, Houston through ATS. How do you read?

CC-H Command module pilot, Houston. How do you read?

ACDR-DM Hello, Houston; this is Apollo.

CC-H Roger. Go ahead.

10 52 25 ACDR-DM Okay. We're now on step 27, Bo. We're depressurizing the docking module.

CC-H Understand. And command module pilot, Houston. How do you read?

CMP-OM Okay, Bo, I'm reading you 5 by 5.

CC-H Command module pilot in Soyuz, do you read?

CMP-OM Right, Bo. Read you 5 by.

CC-H Roger. We would like you to have Valeriy check the switches in the Soyuz called out on page 6.3-72 in book number 3 - I'm sorry, that's book number 2, which are the DM PRESS TO TALK, ON; the MICROPHONE POWER, ON; and the COMM CABLE, ON, on the orbital module panel.

ACDR-DM Vance, you read?

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CMP-OM Yeah. Stand by 1, Bo, and we'll get Valeriy up here.

DMP-CM Vance is reading you. So, he can take care of it in there, Bo.

CC-H And, Apollo commander, Houston.

ACDR-DM Go ahead, Bo.

10 54 14 CC-H If the switches in the orbital module don't fix Alexey's communication, we would like to have Deke get out the spare Snoopy from U-2 and pass it into the DM before Alexey transfers into the command module, and let him change out his headsets before he transfers into the command module.

ACDR-DM All right.

CMP-OM And, Bo. Please give us this information again about which switches to check in here in the Soyuz.

CC-H Roger. It's in book 2, 6.3-72, and those are the switches that are called out in the checklist for establishing communications in the DM.

CMP-OM Thank you. Okay. Got any idea ...

CC-H Docking module pilot, Houston.

DMP-CM Go ahead, Bo.

CC-H Deke, we've been having quite a bit of trouble with the speaker boxes, so we request that you don't use the speaker boxes, but rather the Snoopy hat as much as possible.

DMP-CM Yeah, that's what we're doing. You want us to turn them off completely?

CC-H Understand.

10 56 12 ACDR-DM Okay, Deke. I've finished. I'm on step 28, the CM-DM pressure equalization. You ready?

SFE-OM (Alexey, how do you read me? Over.)

10 56 22 DMP-CM No, not quite, Tom. We had exactly the same problems here we had in simulation; namely, the floodlight is

always floating.

10 56 44 ACDR-DM Deke, I'm equalizing pressure.
CMP-OM Okay, Alexey. (How do you read?)
ACDR-DM Okay, Deke. If we need to, that spare Snoopy's back in U-2, below that Earth obs - Earth observation stuff.
DMP-CM Okay, tell me if you want it.
SCDR-DM (I do not hear.)
SFE-OM (How can't you hear? We hear you.)
SCDR-DM (I hear.)
SFE-OM (Yes?)
SCDR-DM (Yes.) Okay; loud and clear.
SFE-OM (Let's finish.)
CMP-OM (Yes.)
CMP-OM Houston, that fixed the problem. (Everything is normal now.)
CC-H (Roger.)
SFE-OM (We hear you. We hear you.)
SCDR-DM Okay. Vance, how do you read me?
CMP-OM (Excellent, Alexey.)
SCDR-DM Deke, how do you read me?
DMP-CM (Excellent, Alexey.)
SCDR-DM Hey, Deke, how do you read me?
DMP-CM (Excellent, Alexey.)
SCDR-DM Okay.
10 57 57 SCDR-DM (Valeriy, we are opening hatch number 2.)

10 58 14 ACDR-DM Okay. I'm going to open hatch 2.

ACDR-DM Okay. You ready for Alexey to come in, Deke, for the photographs?

DMP-CM Okay. Stand by a sec here. Let's see. Got good ATS. Monitor looks okay, and I got the TV camera set up.

DMP-CM Just 1 sec here. Let me check this light.

DMP-CM Okay. I got all the cameras ready to turn on. ... Suit yourself.

ACDR-DM Okay. ... go?

SCDR-DM Yes.

10 59 13 ACDR-DM Okay. Opening hatch 2 and Alexey should be coming in.

DMP-CM Okay.

10 59 35 DMP-CM I just turned that speaker box off.

ACDR-DM Okay.

DMP-CM Okay. ...

DMP-CM ... and I turned them off ...

ACDR-DM ...

SCDR-DM Yes.

SCDR-DM (Ready.)

DMP-CM ..., Alexey. (Where are you?)

SCDR-CM Hello. Oh! Howdy partner. My old friend.

DMP-CM (Welcome!)

DMP-CM (To America.)

DMP-CM Here we go.

SCDR-CM Where is my place?

DMP-CM Well, for now come right into here.

SCDR-CM Okay. Back. Okay.

DMP-CM Yeah. There we go. Good show.

SCDR-CM Back.

ACDR-DM ...

SCDR-CM Okay.

DMP-CM (How do you feel?)

SCDR-CM Very well. How are you?

11 00 50 DMP-CM (All right.)

DMP-CM Okay. Now ...

SCDR-CM Back.

DMP-CM Do you think ... Flight Plan?

SCDR-CM Yes. Just a moment.

DMP-CM ... cameras ...

SCDR-CM Oh. This one?

DMP-CM That's your Flight Plan.

SCDR-CM Okay.

DMP-CM ...

SCDR-CM DAC 2.

DMP-CM Yeah, and here's the photo card.

DMP-CM ...

CMP-OM Houston, Apollo.

CC-H Go ahead, Vance.

CMP-OM Or rather, Soyuz. How's your view in here in the orbital module?

CC-H Right now - Vance, right now we have the picture on the command module. We have a good view.

DMP-CM ...

CMP-OM Okay. Shortly we'll be coming on and give you a little explanation of what's in here.

CC-H Roger. We're looking forward to it.

DMP-CM ...

CMP-OM Hey, by the way, if you're looking, Bo, there's Valeriy's family. His wife, Lyudmila, and two children - daughter, son. Let's see, it's Kat - -

CC-H Roger. We can see Lyudmila and Katya.

CMP-OM Lyudmila and Katya - Dmitri. Yeah, that's it. The boy, the youngest, is Dmitri. Good-looking family, huh?

CC-H Roger. We can see them here on the TV.

CMP-OM Katya is down on the shore of the Black Sea right now in a dacha having a - or in a camp - summer camp, he says.

11 04 28 CC-H Roger. That's a fine-looking family there.

CMP-OM Okay. And whenever you're ready, I think we're ready to go ahead and show you around the Soyuz a little bit.

CC-H Roger. We're ready and a lot of people are anxious to see that craft.

ACDR-CM ... so let me check with ... about that.

CMP-OM Okay. My friend, Valeriy, here is ready to show you and - please start, Valeriy.

SFE-OM Hello, American people. This is your Soviet/American TV center in space. That's ... onboard the docked Apollo/Soyuz spacecraft. I am going to tell you about Soyuz spacecraft. The Soyuz spacecraft consists

of some compartments: the orbital module, the descent vehicle, instrument assembly unit, and propulsion system. The propulsion system has one main chamber - chamber engine and two chamber backup engine. These engines are used for maneuvering in orbit and deorbiting in the - at the end of the mission. The instrument assembly unit is pressure tight and contains all spacecraft main systems, which are used during orbital flight only and are not recovered. We are in orbital module. The orbital module is used for conducting scientific experiments and for crew - and for crew rest. There are areas ... for sleep, work, and rest for cosmonaut and for astronauts.

SCDR-CM Astronauts.

SFE-OM Astronauts.

SCDR-CM Astronauts.

DMP-CM Okay.

SFE-OM Space food. We keep in this locker.

SFE-OM Vance, out there also in the kitchen.

CMP-OM Very good. That's lunch, huh?

SFE-OM There is orbital module - orbital module panel. You can see on your TV screens now.

SFE-OM The purpose of the panel is to control and monitor the orbital module systems. These are the following: environmental control system, the TV and the illumination system, the radio system ... and the other - some systems. Next to this panel, there is the other one. We can use this panel for monitoring pressure integrity check or for Soyuz spacecraft in tunnel 2, and for air pressurizing and pressurizing of Soyuz and tunnel 2.

11 08 46 SFE-OM There are water systems - with the water supply and ... If one put the water supply - the water supply gun in your mouth - -

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CMP-OM Yeah. If you put it in the mouth, that's the way to take a drink, huh?

SFE-OM You can drink.

11 09 42 SFE-OM There are two windows in the orbital module, the right one and the left one. One can observe the ground surfaces through these windows. We use this window for scientific experiment. There are three hatches in the orbital module. It is hatch number 4. This hatch is used for transfer from one spacecraft into the other spacecraft. This hatch was opened after docking and pressure integrity check yesterday. There is the other hatch. Here it is. We use this hatch for extravehicular activities. Welcome into Soyuz. The ... hatch is used for transfer from the descent vehicle. There are two folding desks in the orbital mod - -

11 11 31 SFE-OM This desk we used yesterday to sign the joint document to start our joint activities in space. Tom Stafford, Deke Slayton, Alexey Leonov, and me sit at this desk and ... - and had our space talks. We - we are using this desk for our space lunch, too. Our space - spacecraft, Soyuz, has two living compartments. The second living compartment is the descent vehicle.

SFE-OM You ***

11 12 55 CC-H Vance, Houston. We seemed to have lost Valeriy's voice.

SFE-OM ...

CMP-OM Okay. We'll try a quick voice check, here.

CMP-OM Do you hear him now?

CC-H Negative.

SFE-OM ...

CMP-OM Do you hear now?

11 13 36 CC-H Negative. We do not. It looked like you were about finished there with the tour. Perhaps you

can get it squared away, and we'll see you again in the descent vehicle.

CMP-OM Okay. Yeah. That was a real good look anyway, and we'll see you down in the descent vehicle soon.

CC-H Roger. And I know Valeriy can't hear us. Would you please thank him for a most interesting tour.

CMP-OM Will do.

CC-H And, command module pilot, Houston. It looked to us as if Valeriy may have knocked something with his elbow there over on the orbital module panel.

11 14 15 CMP-OM Okay. We'll check.

11 15 40 CC-H Apollo, Houston. How do you read?

ACDR-CM Bo, how do you read me?

CC-H Roger. We read you. We see you're getting ready for the tour of the command module.

ACDR-CM Okay.

11 16 17 CC-H Apollo, Houston. We lost communications with Valeriy. Did you do anything in the command module that may have caused that?

11 16 27 ACDR-CM Could be. What do you want me to check on panel 10? I tried to hook into the center headset, but I couldn't get anything. So I moved over. I'm on the right-hand-seat headset now.

CC-H Understand.

ACDR-CM Hey, Vance?

CMP-OM Yeah. Hey, we checked our switches here and everything's in order, so why don't you check over there?

ACDR-CM Okay. What particular one on 10? You want VOX on that?

CMP-OM That's affirm.

11 17 13 CC-H Tom, you've got a loud squeal now.

11 17 19 SCDR-CM Hello, American people. Hello, American people.
How do you read me?

ACDR-CM There, we got rid of it then.

SCDR-CM How do you read me?

CC-H Apollo, Houston. We can't read you. We suggest
you use the checklist, Apollo systems, on page 1-40.

DMP-CM Check. Check.

11 17 54 DMP-CM ... see that page. Okay. Panel 10, Tom. MODE to
VOX. ... on this one.

ACDR-CM ...

DMP-CM MODE to VOX; VOX SENSE ...; VHF FM, RECEIVE.

ACDR-CM What?

DMP-CM VHF FM, RECEIVE.

ACDR-CM ...

DMP-CM VHF - -

11 18 18 CC-H Apollo, Houston. We hear you trying to call, but
you are not understandable. There is a very loud
squeal coming over the comm system.

11 18 28 DMP-CM POWER, AUDIO.

ACDR-CM What?

DMP-CM POWER, AUDIO; MASTER thumbwheel to 5; INTERCOM,
T/R; INTERCOM thumbwheel, full decrease.

11 18 45 DMP-CM That did it. ... - -

11 18 47 SCDR-CM (Moscow, this Soyuz. How do you read me?)

DMP-CM - - VHF AM, OFF?

ACDR-CM Yeah.

DMP-CM AUDIO CONTROL, BACKUP?

ACDR-CM Yeah.

DMP-CM PHONE/MIC control, ON?

ACDR-CM Yeah.

DMP-CM Okay.

11 19 03 ACDR-CM How do you read now, Bo, okay?

CC-H Roger. We read you much better now, but you still have quite a bit of static.

ACDR-CM Okay.

DMP-CM Yeah. We have a super loud squeal here. You read us okay now?

CC-H We've gotten rid of our squeal.

DMP-CM So have we.

ACDR-CM Does this light still stay on, here?

DMP-CM Yeah. That's supposed to be ...

11 19 42 CC-H Apollo, Houston. There's so much background noise
- -

11 19 44 SCDR-CM (Moscow, Soyuz. How do you read?)

CC-H - - that we can barely read you.

ACDR-CM Understand. You can barely read.

CC-H Roger. When you are close to the microphone and speak loudly, we can read, but it's difficult.

SCDR-CM Houston, this is Soyuz commander. How do you read me?

11 20 01 DMP-CM Okay. It's ready to tour, Tom, whenever you are.

11 20 07 ACDR-CM Okay. (Alexey. I will now show you our spacecraft, the Apollo. We are very happy to meet with you here in the Apollo. This spacecraft - -)

11 20 27 CC-H Deke, if you can get to it, we would like the VOX thumbwheel down on panel 10 about one step.

DMP-CM Stand by; no way I can get to it.

11 20 42 ACDR-CM How's that? How's that, Bo?

CC-H Down one more step.

11 20 52 ACDR-CM Okay. How's that now?

CC-H That's much better.

ACDR-CM Okay.

CC-H And if somebody has a chance, if they can put a shade or something over the hatch window, it would help the TV picture.

ACDR-CM Okay.

11 21 16 SCDR-CM (Valeriy, how do you read me?)

SFE-OM (Very well.)

SCDR-CM (Do you have comm with Moscow?)

ACDR-CM How's that, Bo?

CMP-OM Which cable are you on, Tom?

CC-H That's an improvement.

SCDR-CM (No, huh?)

ACDR-CM Say again.

DMP-CM He wants to know what portable cable - -

ACDR-CM Okay. You want to continue on, Bo?

CC-H Roger. Continue.

11 21 46 CMP-OM (How - -)

ACDR-CM (The Apollo, this is - -)

11 21 49 CMP-OM (- - not)

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11 21 52 ACDR-CM (The Apollo is the spacecraft aboard which the astronauts have flown to the Moon and also to our space station Skylab.)

11 22 03 SFE-OM (Wait just a minute, it's early.)

11 22 06 SCDR-CM (Early, isn't it?)

SFE-OM (Yes.)

ACDR-CM (This is the orientation indicator. This is the main indicator for our operations, and this is the backup indicator.) Bo, can you see that on the set?

CC-H Just from the side; we can't really get a good view of the indicator.

ACDR-CM Roger. (Here is the computer. The role of the computer aboard the Apollo is a very important one. The computer makes it possible for us to tell the distance between the Soyuz or other vehicles - spacecraft in space. If I want to know our exact orbit, I can interrogate the computer. For an example: if I want to know the height of our orbit, I can ask the computer.)

11 23 21 CC-M (Everything is heard well.)

11 23 26 SFE-OM (Roger.)

11 23 29 CC-M (...)

ACDR-CM (Now, the - a computer is thinking after I ask it - it's thinking what to - how to respond. And now you can see our apogee of 124 miles by 121 miles. Then, here, you can see our perigee and apogee. It's a very smart computer.)

11 24 10 SCDR-CM (We will begin or not?)

SFE-OM (Okay.)

SCDR-CM (Moscow, this is Soyuz. How do you read?)

CC-M (Soyuz, Moscow - -)

SCDR-CM (I read you well. When are we having a TV session - from the Apollo?)

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DMP-CM Picture looks good here, Tom.

ACDR-CM Okay.

11 24 34 CC-M (Then let's ...)

ACDR-CM Okay. You seeing this down there, Bo?

SCDR-CM (I don't see the light of the ...)

CC-H Tom, Houston. We'd like you to try to move down to the LEB as quickly as possible so we can get it on - -

11 24 48 SCDR-CM (You have a picture, don't you?)

CC-H - - USSR TV, too.

ACDR-CM Okay. Good. (Let's begin.)

SCDR-CM (That's all.) Okay. (How is the picture?)

11 25 05 ACDR-CM (Alexey, this is another - -)

CMP-OM (Yes. Fine.)

ACDR-CM (- - important place for work of - -)

CMP-OM (Yes.)

ACDR-CM (- - the Apollo crew. Here's - -)

CMP-OM (Yes.)

ACDR-CM (- - where we have the - -)

CMP-OM (Yes.) Uh-huh.

ACDR-CM (- - sextant and telescope.)

SFE-OM (...)

SCDR-CM Okay.

SFE-OM (...)

11 25 36 SCDR-CM (Now we have the second day of our flight. We finished the second transfer. Vance Brand is with Valeriy Kubasov onboard the orbit spacecraft and I am in the Apollo with Tom Stafford and with Deke Slayton.) Tom, come here. (Tom Stafford. You know the American astronaut who's made three space flights. You know him. And now his fourth flight. Deke Slayton is sitting to the right. He is an old space veteran but this is his first flight into space. Now I am asking Tom Stafford.)

SFE-OM ...

SCDR-CM Tom is that! Okay.

ACDR-CM (Soviet TV viewers. I am very happy to meet with Valeriy and Alexey here in space.)

11 26 26 SFE-OM (Repeat ...)

CMP-OM (Yes. After him.)

ACDR-CM (Here we have our onboard computer and if I ask our computer what our apogee and perigee are, the computer will think about how to respond. Now you can see 122 miles by 121 miles. A very smart computer. And this is the second important workplace for the crew.)

SCDR-CM Tom, which Apollo system is the heart of the spacecraft? (I asked, "Which - which system is the heart of the spacecraft?")

ACDR-CM (The heart of the spacecraft is the computer and the inertial gyro platform.)

SCDR-CM Okay.

ACDR-CM (And also the fuel cells. Fuel cell is the power - electrical power source.)

SFE-OM (Hour 1.)

SCDR-CM (And here we have number of switches.)

CMP-OM Oh - -

SCDR-CM Okay, Tom, ... (Groan) put it here. Okay.

ACDR-CM (Here - this is the second important place for the Apollo crew. Here, we have the telescope and the sextant. We observe - we look at the stars through the telescope and determine our orientation. Also, during the approach to the Soyuz, we looked at the Soyuz through the telescope.)

SCDR-CM Tom, do all Apollo spacecraft systems have primary and backup modes? (I asked, "Do all these systems of the Apollo spacecraft have the primary and emergency backup modes?")

11 29 13 ACDR-CM (Yes. All its systems have the primary and backup modes. For example, this is the main indicator, and here's the backup indicator. We have a main and also a backup inertial plat - gyro platform. Here, we have a fuel cell plus a battery.)

SCDR-CM Tom, does it take much time to learn to operate all spacecraft systems? (I asked, "Did it take a long time to learn how to operate all these systems?")

ACDR-CM (Yes, it does take a long time, Alexey. I think about a year - a year's work - should take a year before the astronauts know all the systems.)

SCDR-CM Where do you sleep here? What is this?

ACDR-CM (Here is the place where I sleep. This is the Apollo commander's place. You know who the Apollo commander is?)

SCDR-CM I know. Tom Sta - (laughter).

11 30 30 SCDR-CM (Dear viewers, with this, we are ending our short TV coverage. I think we'll meet again in space at least once, or more. And, certainly, we'll see each other on Earth after we return - after we all return, each of us to his own homeland - in the Soviet Union and in the United States of America. Thank you, Tom. Thank you very much.)

ACDR-CM (Here we have a small kitchen aboard - -)

11 31 02 MCC-H Uh-huh. Okay. If you can get a word in, let's tell them we're going to switch over to the descent vehicle.

ACDR-CM (- - there is very little room here but, after all, nobody has to do any dishes.) (Laughter)

CMP-DV Okay, Bo. How are you reading us down in Soyuz, now?

MCC-H Fine.

CC-H Vance, we're reading you well.

SCDR-CM Just now, ... - -

CMP-DV Okay.

SCDR-CM - - ... tour.

CC-H Tom, we've had an interesting tour, there - -

SCDR-CM Beautiful.

CC-H - - and we're about ready to switch over to Soyuz now.

ACDR-CM (All right.)

SCDR-CM It was a very small time!

11 31 34 CMP-DV Okay. Valeriy and I are down in the descent vehicle, the part of the Soyuz that is really the control center and the part that comes down for landing. And Valeriy's on the - in the right seat - (flight) engineer's seat - about ready to give you a few words. But first, I'd like to make sure that we have communications with Valeriy now. We lost him a little while ago.

DMP-CM Tangled in cables.

SFE-DV How do you read me?

CC-H Vance, would you relay that we read Valeriy.

CMP-DV (All right, Valeriy.)

SFE-DV Okay! We are in the descent vehicle now. The crew control center - monitors the operation of the spacecraft main systems from the descent vehicle. There is an instrument board. Here it is. You can see it on your TV screens now. I - I would like to illustrate the purpose of this panel to you.

DMP-CM Try to get it stowed, for now, is all.

SFE-DV So-called globe instrument. Shows automatically the - point of the Earth our spacecraft is flying over at this moment. In front of me - in front of me, there is a - -

11 33 20 CC-M (That's a film, isn't it?)

SFE-DV - - there is another panel. It shows us how the system is operating - now. This panel has the caution and warning displays. There is one more unit - here. Here it is. We can send digital data - use this panel in automatic systems. Here are two command signal devices. The right one and the left one. We can send about 380 code - -

DMP-CM It's better where we can find it.

SFE-DV - - functions to control the spacecraft. You can see the two couches now. The left one is - Soyuz commander, and the right one is mine. Vance is now in - Soyuz commander couch. We take these seats during landing and lifting off. At this time, we have a pressure garment assembly on. Now the PGAs are in the orbital module. There are two controllers. The left one - left one. Oh. (Laughter) Left one!

CMP-DV Pretty hard to see.

SFE-DV Uh-huh. Left one - is used to - for orientation maneuvering relative to center of gravity. The right one - is used to translate the spacecraft center of gravity - relative the orbit and change the spacecraft orbit. The descent vehicle has two windows and a special lighting device - special light - -

CMP-DV ...

11 36 26 SFE-DV Generally speaking, the descent vehicle has more equipment than the orbital module. That's why you - we prefer spend our free time in the orbital module. And, Vance, would you - would you like to say - how - do you like the Soyuz spacecraft?

CMP-DV Of course, Valeriy. Wouldn't be in here right now if I didn't enjoy coming in and looking around and - Looks to us like it's be a good air - -

ACDR-CM ... go ahead and finish. Get that out.

CMP-DV - - a good spacecraft to be flying in. We've really enjoyed your tour here. Okay - -

11 37 16 CC-H Roger, Vance. We heard that well.

CMP-DV - - Valeriy says - Valeriy says that will be the end of his tour down here. It's a real interesting place down here; first time I've had a chance to be here in flight. And I guess we'll turn it back to you now, Bo.

SCDR-CM (We'll be finishing our daily session.)

CC-H Roger. Thank you very much, Vance, and thank Valeriy again for us; that was a very interesting tour.

SCDR-CM Okay.

CMP-DV Right.

SCDR-CM (What time do we finish the session? Tell us.)

CC-H Command module, Houston.

DMP-CM Go ahead, Bo.

SFE-DV ... with our modules ...

11 37 48 CC-H On panel 181, we would like to have you turn the three television camera POWER switches OFF.

DMP-CM Okay. Stand by, Bo.

SFE-DV ... (Let's start to give ...)

11 38 10 SFE-DV (Continuation of familiarization.)
SCDR-CM (Roger. Let's go right now.)
CC-H Apollo, Houston. There are 2 minutes until ATS LOS.
The next station is Vanguard at 71:41.

11 38 58 ACDR-CM Okay, Bo. And we got the three cameras OFF for you.
CC-H Thank you.

11 39 02 ACDR-CM Also, I got that helium injection on about - time
there for you.
CC-H Roger.

11 39 22 SFE-OM (Moscow, this is Soyuz. Turn it on.)
CC-M (...)
SFE-OM (Do you have any estimate - -)
ACDR-CM (All right.)

11 40 03 SFE-OM Okay. (... We have a picture.)

11 40 13 SFE-OM (We have the American TV camera here. Good evening,
comrade TV viewers. We are on the - onboard of the
spacecraft. Onboard we have - Leonov is now in the
Apollo, and here we have Vance Brand. In Soyuz with
Brand; we are in the orbital module of the Soyuz
spacecraft. We have just had two TV sessions for
the American people in regard to the - about the
Soyuz spacecraft vehicle and now we want to tell
you about our program and also tell you somewhat
about our spacecraft. Yesterday at 4 o'clock, we
completed the first transfer. And here we have our
TV session where there were a lot of movies made
and a lot of still pictures. And also we exchanged
- we will have to exchange souvenirs, and also we
are scheduled to perform a number of joint experi-
ments. As you see, the program is very tight.
Here in the orbital module, we have everything that
is necessary for us to work comfortably.)

CC-M (We have too much light on the right; you - you look
like negatives on film. That's excellent. Take
the light off completely.)

SFE-OM (How is it now?)

CC-M (Excellent.)

SFE-OM (We just put the light in a different place.)

CC-M (Roger.)

SFE-OM (Here in the orbital module, we have many different lights; the light which we use for picture taking, for television, and for movie photography. Our TV session is coming to a close, so with this, we will say goodbye to you, our dear comrade TV viewers; and the best of everything. Goodby.)

CC-M (Thank you, Soyuz 2 and Soyuz 1. Everything went well.)

END OF TAPE

Day 199

TAG Tap 199-07/T-38
Time: 199:12:00 to 199:13:30
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

12 01 31 CC-H Apollo, Houston through Vanguard for 7 minutes.
DMP-CM Okay, Bo.
CC-H Roger. We read you, Deke. And we would like, on panel 10, the VHF FM thumbwheel positioned to 4, which should be about one number lower.
DMP-CM Okay. Stand by, Bo. We're working the area.

12 01 58 CC-H Roger.

12 04 40 DMP-CM (Soyuz, this is Apollo. Ready for orientation.)

12 05 09 ACDR-CM Okay, Vance. We're maneuvering to inertial attitude. And once we get there, we'll set up a P20.
CMP-OM Okay.

12 05 28 CMP-OM (Valeriy says he is ready for the maneuver.)

12 06 06 SFE-OM Tom. Tell him ..., Tom.
SFE-OM (Groan) (...)

12 07 49 CC-H Apollo, Houston. There is 1 minute until LOS. ATS acquisition at 72:03.

12 07 57 ACDR-CM Roger, Bo. And we're maneuvering to the inertial attitude for comm, and we'll be all set to proceed on the orbital - on the orientation for the tour.
CC-H Roger.
ACDR-CM And it looks like we are right on the time line today.
CC-H Very good.

12 08 42 ACDR-CM (Soyuz, this is Apollo. Orien - orientation established.)

12 08 50 CC-H Apollo, Houston. We like to remind you not to PRO until 72:05.

12 24 43 CC-H Apollo, Houston through ATS. How do you read?

ACDR-CM Bo, read you loud and clear. We're about ready to proceed in 10 seconds on that P20.

CC-H Roger. Understand.

ACDR-CM And we're on the way. We're maneuvering.

12 32 07 ACDR-CM Houston, Apollo.

CC-H Apollo commander, Houston. Go ahead.

ACDR-CM Okay, Bo. Is all the TV cameras set up the way you want them here?

CC-H We're not watching TV right now. First, on panel 181, we'd like you to turn the three TV POWER switches ON.

ACDR-CM Roger.

12 33 06 ACDR-CM Okay, Bo. You got the three POWER switches ON.

CC-H Roger. And when we get the cameras on, I'll give you a call so we can adjust them.

ACDR-CM All right.

ACDR-CM Okay, we got one camera shooting out the window and the other one shooting across the spacecraft.

CC-H Roger.

ACDR-CM Looking out the window, it looks pretty good.

12 37 21 CMP-OM Apollo, Soyuz.

ACDR-CM Go ahead.

CMP-OM Are you - Tom, are you in the local horizontal attitude yet?

ACDR-CM Oh, yeah. We're - we're - we're - Deke's doing Earth obs, and we're in local - we're - we're in Earth obs attitude.

CMP-OM Okay. So you'll be staying in this attitude for a while for this tour we're going to have. Right?

ACDR-CM Yep.

ACDR-CM Hey, Vance. Have you had your Florida tour yet? I'm skipping back in the Flight Plan. Go ahead.

CMP-OM I ... did.

ACDR-CM Oh, yeah. Okay. I've got that in here.

12 39 46 CC-H Apollo, Houston. We're getting - getting an inside view of the command module now. And we'd like you to move that camera a little bit to the left and down, so that we can get a better view of the crew.

ACDR-CM How's that, Bo?

CC-H Could you move it a little more left, please?

CC-H Okay, that looks pretty good to the left. Now if you'd move it down a bit.

CC-H All right. Hold on there for a second, and let us watch the picture stabilize.

ACDR-CM All righty.

CC-H Apollo commander, Houston. Over.

ACDR-CM Go ahead.

12 41 48 CC-H We're having some difficulty with noise here. Would you ask the Soyuz commander to please give us a voice check.

ACDR-CM Roger.

SCDR-CM Oh.

SCDR-CM Houston, this is Soyuz commander. How do you read me?

CC-H Roger. We read him. Now can we have Valeriy to ... - -

SCDR-CM Houston. How do you read?

ACDR-CM Say again, Bo.

CC-H We read Alexey well. Could we have Valeriy give us a voice check?

ACDR-CM (Valeriy, please give a comm to MCC-Houston.)

ACDR-CM Say, Vance. Do you read? Have Valeriy give Houston a count, will you?

12 43 11 SFE-OM Houston, Houston. This is Soyuz. How do you read me?

CC-H Roger. Whoever spoke that time, we read ... - -

SFE-OM How do you read me?

ACDR-CM That was Valeriy giving you a call.

CC-H Okay, we read him.

ACDR-CM All right..

CMP-OM Okay, was the communication satisfactory?

CC-H We have some noise, and we're trying to track it down. We did, however, read Valeriy quite well.

CMP-OM Very good.

DMP-CM Hey, Bo. Can somebody there tell me quick where you got some more IR film stashed?

CC-H Say that again, please.

12 44 03 DMP-CM IR film for the 70-millimeter solar camera.

CC-H You're saying you want the film location for the 70-millimeter camera.

DMP-CM IR.

SCDR-CM Do you know ... ?

CC-H Yeah. Roger.

SCDR-CM ... looks like Vance.

CC-H Deke, the IR film is located in A-6.

ACDR-CM ...

CC-H Apollo, Houston. Over.

ACDR-CM Go ahead.

12 46 05 CC-H We're having some voice problems here with the S-band. My voice is being turned around to us. We'd like you to - check S/1-40 again and reverify the position of the switches.

ACDR-CM S/1-40 in work.

CC-H Roger. Not so much the switch to VOX as the thumb-wheel setting.

ACDR-CM Okay.

12 47 01 ACDR-CM Okay, Bo. I got VOX SENSITIVITY on panel 10 as about 5. Let's see, the checklist calls it 8. You want it up or down?

CC-H I'll check with INCO.

CC-H Tom, we'd like you to leave the VOX at 5.

ACDR-CM Okay.

CMP-OM Will the - -

12 47 29 ACDR-CM VHF FM thumb - thumbwheel is 5 ...

CMP-OM - - ... experi-

CMP-OM (We're doing that.)

ACDR-CM The S BAND's at - -

CMP-OM (We're doing this later. Right?)

ACDR-CM - - S BAND thumbwheel is not full decrease. ... want me to put that in full decrease?

CMP-OM ...

ACDR-CM How do you read, Bo?

CC-H Go ahead. We read you, but you have a background noise.

DMP-CM (Laughter)

ACDR-CM Yeah, anytime that I get the S BAND thumbwheel out of full decrease, it goes.

CC-H Understand. S BAND thumbwheel goes full decrease.

DMP-CM ...

12 48 31 ACDR-CM And the POWER is at AUDIO, the MASTER is 5, like the checklist. The INTERCOM is T/R, INTERCOM thumbwheel is full decrease. VHF AM is OFF. AUDIO CONTROL panel is BACKUP. And the PHONE/MIC CONNECT is ON.

CC-H Roger, Tom. And we would like the VHF FM thumbwheel down to 2.

12 49 08 ACDR-CM Roger. Okay, it's down to 2.

CC-H Roger. Could we have a check with one of the Soviet crewmembers now?

ACDR-CM Okay.

ACDR-CM Okay. Did you read Alexey?

CC-H Negative. We did not.

ACDR-CM Okay. Vance, have Valeriy give Houston a call.

CC-H Tom, if Valeriy gave us a call, we did not hear. Would you please move the FM thumbwheel up to 3?

ACDR-CM Then you didn't read Valeriy at all then?

CC-H Negative.

CMP-OM Okay, Valeriy - Valeriy was just speaking to you. Let's try it again.

CC-H Roger. We'd like to try the thumbwheel in 3 - -

SFE-OM Houston, Houston. This is Soyuz. How do you read me? How do you read me?

CC-H Now we read him well.

CMP-OM Good.

12 51 25 SCDR-CM Houston, this is Soyuz commander. How do you read me?

SFE-OM Apollo, Apollo. This is Soyuz. How do you read me?

SCDR-CM Apollo, I read you loud and clear. Soyuz -

SFE-OM (Alexey, how do you read me?)

SCDR-CM (I read you excellently. I hear you excellently, Valeriy.)

SFE-OM (Where are we flying now? Over what?)

SCDR-CM (Well, take a look at the gyro. It's easiest to tell.)

SFE-OM (I'm now in the orbital module. So go down and take a look at the globe.)

12 52 12 CMP-OM Houston, Soyuz.

CC-H Go ahead, Vance.

SFE-OM (This is the Mediterranean.)

CMP-OM Okay. We're coming up over the Mediterranean Sea now. Just left North - North Africa, and I assume you'll be ready to carry some words from Valeriy on - looking down on the Soviet Union, shortly. Is that correct?

CC-H That's affirmative. And be advised that the weather is going to be a bit cloudy under you and to the north, but to the south, it may be clear.

CMP-OM Okay.

SFE-OM (We've just passed over Africa, and we're now over the Mediterranean.)

SFE-OM (Moscow, this is Soyuz 2. How do you read me? Over.)

SFE-OM (Moscow, this is Soyuz 2. How do you read me? Over.)

12 54 05 SFE-OM (I also hear you well. We're now in the orbital module, near the porthole, and - getting ready for the TV coverage. That's why you are not seeing us well.)

DMP-CM ...

SFE-OM Much better.

SFE-OM (On the TA-3 bracket.)

SFE-OM (Yes. It's not on TA-3.)

SFE-OM (We're trying to have it handheld.)

CMP-OM Okay, Bo. I think we're about ready to go here. Looks like we're coming up over the Black Sea, and right now Valeriy is getting in position. Got a little bit of spaghetti in the cabin here; various cables and cords. He's ready to tell you a little about his homeland here, the Soviet Union, a very big country. Okay, Valeriy. Please go ahead.

SCDR-CM I see my airfield where I flew 10 years ago in Graberin. (Laughter.)

12 56 11 SFE-OM Dear American TV people, you ... about the Soviet Union. Some of you visited my country and you enjoyed the beautiful people, cities and towns, rivers, forests, mountains, and fields. Alexey Leonov and me visited the United States several times and we did enjoy its beautiful landscapes. (Moscow. Answer.)

CMP-OM Are you reading, Bo?

CC-H Roger. We hear Valeriy.

SFE-OM Roger. It would be wrong to ask which country's more beautiful. It would be right to say there is nothing more beautiful than our blue planet. You will enjoy the sight of it together with us and we shall help you, explaining what flows below the spacecraft. We are going to tell you about a little part of our country, which you will see on your TV screens. Our spacecraft, Soyuz, is approaching the U.S.S.R. territory. Our country occupies one-sixth

of the Earth's surface. Its population is over 250 million people. It consists of the 15 Union Republics. The biggest of them is the Russian Federal Republic with the population of 135 million people.

SCDR-CM Valeriy, please. Tell our people about ...

SFE-OM (Alexey. Where are we flying now?)

SCDR-CM (Past the Volga.)

SFE-OM (Volgograd.)

SCDR-CM (Oh, we passed Volgograd.) (Just passed the Volga.)

12 58 54 SFE-OM We are approaching the Volga River now. This river is the biggest in the universe. At the moment, we are flying over the place where the Volgograd City is. It was called Stalingrad before. In winter 1942-1943, German fascist troops were defeated by the Soviet army here. 330 000 German soldiers and officers were killed and taken prisoner here. (Moscow, this is Soyuz 2.)

MCC-M (... 14:19 ...)

SFE-OM (Okay.)

MCC-M (3 minutes.)

SFE-OM (I won't have time to finish it in 3 minutes.)

SCDR-CM (Moscow, this is Soyuz. How do you read?)

MCC-M (I read you well. How me?)

SCDR-CM (I read you excellently.)

SCDR-CM (I am now in the command module of the Apollo spacecraft. I am here together with Deke Slayton and Tom Stafford. We are flying over the Soviet Union's territory, and we are observing everything which is speeding by below us. We began our observations over the Crimean peninsula and now we're approaching the Ural Mountain range. It's a beautiful Earth below us; blue, covered with slight cloud. The ... is visible today.)

CC-M (Soyuz 1.)

SCDR-CM (On the line.)

CC-M (Would you do that in English, please.)

SCDR-CM (It looks like today's a very beautiful day on -
over the entire territory of the Soviet Union.
There's a lot of sunshine everywhere - Earth.
Green fields - -)

CC-M (In English, in English, Soyuz 1.)

SCDR-CM Okay.

CMP-OM Houston, Soyuz.

CC-H Command module pilot, go ahead.

13 01 42 CMP-OM Okay. I guess Valeriy's finished, and you got a
word - a few words at the end there from Alexey,
talking to his people on the ground. It's a very
long tour over the Soviet Union. We're still passing
over it. The eastern part here is steppe, or desert,
and there's just a lot of country here - lot of
farmland down here on the steppes, apparently. I
think very shortly we'll be at the Pacific, and
here's some more words from Valeriy.

SFE-OM - - of April 1961. From that time, we celebrated
the 12th - the 12th of April every year as a Cos-
monaut Day. Our spacecraft was launched from here,
too.

SCDR-CM By the way, 3 years ago - 3 days before, Valeriy
Kubasov and me was launched from this Baykonur
launch pad.

SFE-OM We are going to land here after the end of the
mission. This part of Kazakhstan was not cultivated
until 15 years ago. Today, it is one of our bread-
baskets. A new city, Kaliningrad, was - Kaliningrad
appeared here. It was only 10 years ago. Not far
from here begins the Siberia, the biggest part of
our country, rich in natural resources.

CC-H Command module pilot, Houston.

SCDR-CM We are over mountains now.

CMP-OM Okay. Go ahead.

13 04 47 CC-H We've been getting a good picture here. We can see the clouds and the mountains pass below. You might tell Valeriy we've been enjoying it.

CMP-OM Okay.

CMP-OM Okay. Apparently - yeah, it's a little hard to see the ground now. Valeriy's still looking at the clouds.

SFE-OM (Monitoring pressure integrity. Everything's normal.)

CC-H Command module pilot, Houston.

CMP-OM Go ahead.

CC-H We've lost our TV. Tell Valeriy that we enjoyed the tour. I remember how interesting and pretty a country it is from my visits there.

13 05 34 CMP-OM Right. We'll just call this the end of the tour, because we are coming up on the Pacific very shortly. Course, a lot of interesting cities here in the Soviet Union, especially in the eastern part, and as you can tell, Soviets very much remember the war 30 years ago. Fortunately, we've come a long way since then, for around the world. Okay. You've got it, Bo.

CC-H Thank you very much.

SCDR-CM (Thank you. Excellent.) (Laughter)

13 06 14 SFE-OM (Where are we flying over now?)

CC-M (...)

SFE-OM (Mongolia, Porgonia [?], ... - Altai Mountains.)

SFE-OM (Yes. Standing by.)

CC-M (...)

SFE-OM (Roger.)

CC-M (...)

SFE-OM (Yes, we know how to disable it. I enabled it only for this session.)

CC-M (...)

SFE-OM (Roger. And there was 20 altogether?)

CC-M (...)

SFE-OM (... sounding since the last session on Soyuz after we turn it on.)

ACDR-CM Loud and clear.

CC-M (...)

SFE-OM (Roger. Understood.)

SCDR-CM I move my pen here. Next time, your pen. (Laughter)

SCDR-CM (Pressure in tunnel 2 is now 280. Initial pressure is 265.)

CC-M (Roger.)

CC-H Command module pilot, Houston.

CMP-OM Go ahead.

13 09 11 CC-H We've still been having some comm problems, and we think that possibly Valeriy has got his mike in constant key. And that's on the orbital module panel, PUSH-TO-TALK, TRANSMIT, and if it is, maybe you could ask him to only go to the PRESS-TO-TALK mode.

CC-H Apollo commander, Houston.

ACDR-CM Go ahead, Bo.

CC-H Sir, before on page 4-2, I had you change some of the furnace operations. Now it seems that the furnace is cooling down as it should, and we would like you to do all the furnace operations without any exception, as scheduled.

ACDR-CM Okay. What place you want me to pick up then?

CC-H The ones - the changes I gave to you were on D/4-2 and I had you make a few deletions. You'll have to do those steps that I previously had told you to delete and continue as if everything was normal because it is now.

13 10 46 ACDR-CM Okay. I'll get up there in just a minute. I'm changing lens on the TV camera.

CC-H Okay. Roger.

SCDR-CM (... Yes, yes, there is time for still and movie picture taking. There's not going to be any undeveloped film.)

ACDR-CM Houston, Apollo. What you're talking about is the shutdown on sample 150 ... Right?

SFE-OM (This is Soyuz 2.)

CC-H That's affirmative.

ACDR-CM Roger.

13 13 57 CC-H Apollo, Houston. There is about a minute and a half until LOS. Next station is Guam at 72:57.

ACDR-CM Roger.

USSR (Just a minute.)

USSR (Yes. Go ahead with the next question.)

USSR (The question is: from where to do the transmission. ... docking.)

SFE-OM (Moscow, Soyuz 2. How do you read? Over.)

SFE-OM (Soyuz, how do you read? Over.)

13 17 27 CC-H Apollo, Houston through Guam for about 6 minutes.

ACDR-CM Okay, Bo.

CMP-OM Loud and clear, Bo.

ACDR-CM Okay, Vance. DRIVE MOTOR, ON. MODE is RECORD.

CMP-OM Okay, here we are in Apollo/Soyuz in the Soyuz spacecraft. Valeriy Kubasov and myself. And at the moment, we want to show you a few interesting demonstrations. Physics. (Laughter) And I'm going to do a little talking in English and explaining. Valeriy will explain to you in Russian. First thing we have to show is a book gyro. A book gyro is simply something shaped like a book that can be re - rotated about three axes. Interestingly enough, it's stable about two of those axes and unstable about the third. It's stable about the minimum - about the axes of minimum and maximum moment of inertia and unstable about the middle axis. Now let's give you a little demonstration of this.

CMP-OM The first; maximum. As you can see, we have a stable situation here.

CC-H Less than a minute until LOS. ATS at 73:38.

CMP-OM Next; minimum.

DMP-CM Roger.

MS ...

13 23 48 CMP-OM Well, that's fairly stable, anyway. Mainly the - in between the axis, and this should be unstable.

END OF TAPE

Day 199

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Time: 199:13:30 to 199:15:00
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ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

13 55 08 CC-H Apollo, Houston through Santiago and then ATS.
ACDR-CM Roger, Bo.
ACDR-CM Let's see, Soyuz commander. I found it.

13 58 20 CC-H Apollo, Houston. Over.
ACDR-CM Go ahead, Bo.
CC-H Just a stowage note. You'll find the Soyuz commander's meal is in L-3, which is stowed at the opposite end of L-3 from the pantry.
ACDR-CM We've already got it out, thank you.
CC-H Roger. And I have one other thing. At 17:18 Moscow time, or at 73:58 GET, which is over Madrid, Moscow would like to talk to the Soyuz commander, and we'd like you to have him relay to Soyuz - to have SIMPLEX A and the other items necessary to do that.
ACDR-CM Okay. SIMPLEX A for him.
CC-H Roger. Moscow would like to talk to the Soyuz commander, and it'll have to be set up.
ACDR-CM Okay.

14 00 03 ACDR-CM Okay, Bo. I'm going to SIMPLEX A now.
ACDR-CM Houston, Apollo.
CC-H Roger. Stand by for a second, please. Apollo, Houston. We'd like our spacecraft to remain on Bravo, and we'd just like the Soyuz commander set up so that he can speak through his own spacecraft, SIMPLEX A on radio.
ACDR-CM Oh, okay. I understand. Vance, did you read that?
CMP-OM ...
ACDR-CM Okay.

CC-H And I'll give you a call a minute or so before Madrid.

ACDR-CM Okay.

CMP-OM (It is possible. He sees ...)

ACDR-CM Okay. He wants SIMPLEX Alfa for the setup for the Soyuz commander. Moscow wants to talk to him over Madrid at, set it up for 5:10. It's about 10 minutes. 5 plus 10.

ACDR-CM Go ahead.

CMP-OM *** after ours?

14 01 33 ACDR-CM No, it'll go through yours. Go through Soyuz.

CMP-OM Okay.

ACDR-CM That would be AM.

CMP-OM ...

ACDR-CM That's affirmative. Okay, Houston, Apollo.

CC-H Go ahead.

ACDR-CM Okay; Soyuz is configured for A SIMPLEX.

14 03 29 CC-H Roger. Understand. It will be about 5:12 transfer time when we will be over Madrid. 5:15 transfer time.

ACDR-CM Roger. 5:12 to 5:15.

CC-H Roger. I'll give you a call a minute or so before we get to Madrid.

ACDR-CM Real good.

14 03 42 CC-H And I have a Flight Plan note for you. When you have a chance, please call me.

14 05 51 ACDR-CM Okay, Bo. What have you got on the Flight Plan change?

CC-H At 76 hours and about 42 minutes.

ACDR-CM Go ahead.

CC-H We understand the President of Ecuador and the Ambassadors of the United States and the U.S.S.R. will be visiting the Quito site during the pass. These gentlemen are President Rodriguez, Ambassador Brewster, and Ambassador Shlyapnikov. I'll spell those if you wish.

ACDR-CM Yeah, I got the Brewster.

CC-H Okay; Rodriguez: Romeo, Oscar, Delta, Romeo, India, Quebec, Uniform, Echo, Zulu. Brewster and - -

ACDR-CM Okay.

CC-H Sierra, Hotel, Lima, Yankee, Alfa, Papa, Nectar, India, Kilo, Oscar, Victor.

ACDR-CM Okay. I got those two, and that's at 76:40 something, right?

14 07 19 CC-H Roger. 76:42 over Quito. And it's requested that you relay our thanks to Ecuador and its people for their support to the AST Program after sending your greetings to the station visitors.

ACDR-CM Will do. Be glad to.

CC-H Thank you.

ACDR-CM Oh, Bo, one thing. On the furnace shutdown, it's still too hot on that sample.

ACDR-CM We don't have the cool light yet.

CC-H Roger. Understand. We don't want to shut it down until the start of the third transfer, as per the nominal procedures.

ACDR-CM Okay.

ACDR-CM Okay. I told Alexey about the pass at Quito. We're all squared away.

CC-H Roger.

14 11 09 CC-H Apollo, Houston. Over.

ACDR-CM Go ahead.

CC-H Apollo, it seems that we don't have any TV from the DM, and on panel 808 - 808 in the DM, we would like TV STATION POWERS, ON for cameras - for TV STATIONS 1 and 2.

ACDR-CM Okay.

14 13 45 ACDR-CM Okay, Bo. TV POWER is ON there for you.

CC-H Thank you.

CC-H Apollo, Houston. We're getting the TV from inside the command module. We see Alexey preparing his food there. And we'd like you - to ask you to put the shades into the windows to keep the light from shafting in our picture.

ACDR-CM Stand by. It's kind of hard to move around here.

ACDR-CM Okay, Bo. I guess you want the bigger window shade up. Probably the worst one would be the left one.

CC-H We can't really tell yet, Tom. You're kind of in front of the camera right now.

ACDR-CM How's that, Bo?

CC-H We'll have to wait for the camera to settle down, and we'll tell you in just a second.

ACDR-CM Okay. I got the center hatch window in.

ACDR-CM Right now we're preparing the meal and putting hot and cold water with the food items.

CC-H Roger. We can see that.

ACDR-CM And now we - -

CC-H And we'd like you to check the camera, and if it's in PEAK, we'd like to have you put it in AVERAGE.

ACDR-CM Okay.

ACDR-CM Bo, it's in the AVERAGE right now.

CC-H Roger. Thank you. And we're just about over the Madrid site.

ACDR-CM Okay. I can see you're getting some bright spots in there. I can't tell where they're coming from.

14 19 15 CC-H Tom, we're still getting some light there. Could you just try turning off the strut lights, and see if that helps?

ACDR-CM Yeah.

ACDR-CM Is that better?

CC-H No, it really isn't.

ACDR-CM Yeah, it's the strut. I can see - I can see it's a reflection of the strut lights down there. I turned off the right-hand one. I don't get any more down where my hand is.

CC-H It's the left-hand one or the left-hand area of the LEB that's giving us the light shafting.

SFE-OM (Moscow, this is Soyuz 2, how do you read?)

SCDR-CM (Valeriy, check communication with Soyuz.)

14 20 33 CC-H Apollo, Houston. We'd like the battery B charge terminated.

ACDR-CM ... Go ahead.

14 21 02 ACDR-CM Okay. We got the strut lights off.

SCDR-CM (... one is on T-1. Now Soyuz 2 is starting.)

CC-H Apollo, Houston. It doesn't look like the lights. It looks like it's probably coming from the windows. If you can get to them, we'd appreciate your putting up the shade.

SFE-OM (... It's already ... Alexey.)

ACDR-CM Okay.

DMP-CM Hey, Tom?

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ACDR-CM Yeah.

DMP-CM ... there ...

ACDR-CM Keep talking to him.

SCDR-CM (I didn't understand. I didn't understand. You have strong noisy interference.)

ACDR-CM Okay, Bo. I think this stuff's coming in from the right window over there - I mean the left-hand window.

CC-H Roger. We agree. If you can get to it, we'd appreciate you putting up the shade.

USSR (... end of communication.)

14 22 19 CC-H Apollo, Houston. If you're at the shades, perhaps you could put them up in all the windows. And then we'll have constant light.

SFE-OM (Moscow, this is Soyuz 2. I didn't understand you.)

ACDR-CM Say again, Bo.

CC-H I say, if you've got the shades there, maybe you can put them in all the windows, and then we could probably have constant lighting.

14 22 43 SFE-OM (I do not understand you.)

SFE-OM (Moscow, this is Soyuz 2. I can't understand you at all. Very strong interference.)

14 24 10 ACDR-CM Okay, Bo. How does that look? That was a real chore, I'll tell you.

CC-H Hold on just a second, while we wait until that camera settles.

SFE-OM (Which light should I turn on? I didn't understand.)

USSR (Roger.)

ACDR-CM Now, we've got to have some light, Bo. A little bit.

CC-H It's starting to look a lot better. Just wait another second, please.

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ACDR-CM Okay.

SFE-OM Okay. (The light is switched on according to instructions. I'll do everything.)

14 25 44 ACDR-CM Okay. Alexey said he doesn't have comm with Moscow.

CC-H Roger. Understand. No comm with Moscow for Alexey. Could we ask you to turn the lights up on 5 and 8 a bit?

ACDR-CM Stand by.

ACDR-CM How's that?

CC-H I think that'll probably be good.

USSR (ON, right now.)

USSR (We're ready.)

USA (Okay.)

SFE-OM (Moscow, Soyuz 2. We can begin to introduce our friends the first time we find ourselves with the Americans. Dear TV viewers, I am now with Vance Brand in the orbital module. I would like to ask him to say a few words.) Vance, say some words for the Russian people, please.

CMP-OM (Hello. Okay. Good day. I'm very happy to be here. This is my first time in orbit, and we have found very good hospitality here aboard the Soyuz. Soon we shall eat, and I think that I very much would like to try to taste this food. It can be said that our project here are - is a very important one, and, as you know, everything is proceeding according to program. I think that everything is going very well. Of course, we are friends; we understand each other very well. And I think -)

ACDR-CM Some bread fell off, Deke.

CMP-OM (- - that soon we'll have dinner. I think we'll soon have dinner. Thank you.)

ACDR-CM Here. Some bread fell off.

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SFE-OM I want to ask one more question for. Do you like to fly in Soyuz spacecraft?

CMP-OM (Of course. Soyuz is a good spacecraft. It's very good here. Very comfortable.)

14 29 46 SFE-OM Thank you very much.

14 29 48 SFE-OM (Now we will continue our TV coverage. Our joint activities with Vance Brand, who was visiting here, will soon come to an end, for this joint activity began at 4 hours at Sun - very little is left. The only procedure that we have left to do is our joint dinner. We have conducted all of our joint experiments, all our joint tasks. We have held several TV coverage sessions about the flight, and now the concluding stage of our joint stay here is approaching. To Vance, for you to remember your stay here, I would like to present to you from the Soviet - the Russian people - a medal of the Soyuz and Apollo. Now you would - you can be able to see it on your screens. The same kind of medal was presented yesterday to Stafford and Deke Slayton - yesterday. And today I am presenting this medal to Vance Brand.)

14 31 15 CMP-OM (That's wonderful. Thank you very much.)

SFE-OM It is a gold medal from Russian people to you.

CMP-OM (This is the emblem of the Apollo-Soyuz, yes?)

SFE-OM Apollo-Soyuz Test Project.

CMP-OM (The Apollo-Soyuz.)

SFE-OM (Now we are beginning the - really, we are beginning the final - the conclusion portion of our joint activities here in the Soyuz spacecraft before - No, because soon both of you - both of us will go into the Apollo. We are now beginning our space dinner because we have worked a great deal of time already, and we need some sustenance. Space dinner, as you know - There's some background noise here. There's some interference, I don't understand what it is.)

SFE-OM (Space food consists of several courses. I can't even hear myself. There's some interference here.)

14 32 57 SFE-OM (Moscow, this is Soyuz 2. How do you read? Over.)

SFE-OM (... interference. Moscow, this is Soyuz 2. How do you read? Over.)

CC-M (I hear you normally.)

SFE-OM (Moscow, this is Soyuz 2. How do you read? Over.)

CC-M (We read you. Let go of your intercom button.)

SFE-OM (Roger. We had some interference. How is the picture right now?)

SFE-OM (... Our space food consists of several courses: For the first course today is shchi with sauerkraut, a green shchi. Vance likes green shchi; and for me, shchi with sauerkraut. Second course we have meat, chicken with egg; for the third course, we have juices, black currant juice with sugar. We have coffee. Here we have black plums - plums and strawberries. Here we have everything that is necessary in order to prepare this food. On my right, here is our unique - kitchen. It's an electric kitchen, very comfortable and convenient to use. And I think that our house - housewife at home might be envious of such a kitchen. If I can call this a first course, it's right here. It's already heated. This is a tube which contains the food inside, and I've placed it inside and now am heating it. I would like to ask Vance how he likes our space food.)

CMP-OM (Yes, very much. I like, especially, your bread, the meat, and also the shchi - the soup. I think that Russian food is basically similar to American food. There is not too much of a difference.)

ACDR-CM Houston, Apollo.

SFE-OM (And this evening we're scheduled to be in your spacecraft, so we'll try your food.)

CMP-OM (Okay.)

ACDR-CM Hello, Houston; Apollo.

CC-H Apollo, Houston. Go ahead.

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ACDR-CM Roger. You want Alexey to give a commentary about food here?

CC-H Roger. We would like - some commentary by Alexey.

SCDR-CM (Yes.)

ACDR-CM (Are you ready?)

SCDR-CM (Soyuz 1 is ready.)

14 36 25 CC-H Apollo, Houston. We would like some commentary by Alexey about space food, if he's ready.

ACDR-CM Okay. We're up here now on our lunch. In fact, Deke has prepared most of it, since he's in that part of the spacecraft. Alexey's here in the center getting ready to eat. We'll have Alexey say a few words to you.

CC-H Apollo commander, Houston. When you move forward, your hat comes into the picture, and it causes it to bloom. Also, there's a checklist on panel 3 that's causing it to bloom a bit.

CC-H That's good.

SCDR-CM (... is being carried out.)

ACDR-CM Are you reading Alexey?

SCDR-CM Thank you.

CC-H Negative. We have not read Alexey yet.

ACDR-CM Houston, are you reading Alexey?

14 37 46 CC-H Negative. We have not read Alexey yet.

SFE-OM (Where is this to be plugged in? To which connector? But I don't have the TV camera 3. It's in the Apollo now.)

ACDR-CM Now Alexey is eating some steak, some beef steak.

SFE-OM (I'm writing, I'm writing.)

CC-M ... connector ...

ACDR-CM Looks like it's barbecued, even. Looks like it's roasted on a grill, but it's in a pack that preserves it.

SCDR-CM (Sit down.)

SFE-OM (... Right now 347/10 is on 347/10-1.)

ACDR-CM Have you been reading Alexey before, Houston?

SCDR-CM (...)

CC-H We have before, but not lately. And we do not read him now.

ACDR-CM Okay. I think that's switched over to Soyuz is what - Hey, Vance, would you tell Valeriy to set Alexey up so he can talk into Houston?

14 39 20 ACDR-CM While they're taking care of that, Alexey's continuing to eat his beef steak. He also has strawberries, almonds - -

SFE-OM (... how do you read? Over.)

SFE-OM (Alexey, how do you read? Over.)

CC-H I can see Alexey depressing his mike, but we're not reading - -

SFE-OM (... Over.)

CMP-OM Tell you what, Bo. If you want, while we're getting the comm squared away, we can talk a little about our food over here.

CC-H Roger, Vance. That seems like a good idea. We've got a good picture of you, and we see you fine. If you'd like to, you can tell about the Soviet food.

ACDR-CM Also - Hey, Vance, tell Valeriy that Alexey reads him and the rest of us loud and clear, but he can't transmit.

CMP-OM Okay, Bo. Well, let's press on.

SFE-OM (So, in the third - in the third - transfer, you don't have to do TV coverage 11.1 from the docking

module. This is what Moscow said. Your TV - 11.1
TV session is canceled. Did you lo - did you copy?)

14 41 02 CMP-OM Okay, Bo. Let's start on the meal here, if you're
all set. I think you can see - I think you can see
that Valeriy has spread out a meal for us on the
table. We have a little collapsible table here on
Soyuz, and right now it's covered with food that's
under little rubberband-type devices, such that it
won't float away. Most of the food comes either in
tubes, such as what you see here, or in cans -
like a tuna can - or just in packages - cellophane
packages. The - -

SFE-OM (Yes.)

CMP-OM (Yes.) (Laughter) There is an example of something
in a cellophane package. It's bread. Now, also,
there's a heater for heating up these tubes. The
heater's over here on the wall. Don't know if you
can quite see it. It's - anyhow, it's an electric
heater. And Valeriy, just a short time ago, put
two tubes of soup in there and heated them up for us.
It didn't take long for them to heat up, so now
Valeriy has just opened up one of his tubes, and
he's trying a little of this soup. This is called
shchi, a very common and delicious soup. Incidentally,
the foods over there in the Soviet Union are some-
what similar to ours. Naturally, some dishes that
are different. General - I like things like their
ice cream, bread, shish kebab, things like that. Here
on the table Valeriy seems to like his shchi very
well. I think some of the best space foods are
these canned meats, like we have here: chicken with
eggs, chicken, also tuna, various fishes are very
good.

14 43 26 CC-H Apollo, Houston. On 181, we would like the COMMAND
MODULE 1 and 2 TV POWER, OFF, but we'd like them ON
again before the VTR coverage of the transfer back.

CMP-OM Okay. We have napkins - -

SCDR-CM (Valeriy, how do you read me?)

SFE-OM (Weak.)

SCDR-CM Valeriy, how do you read me?

SFE-OM (I read you very weak.)

SCDR-CM (Valeriy, I have no comm with Moscow at all. I just changed my headphones, and I'm now speaking from Deke's place. I did not do my TV coverage of space food. The way I understood you is not to do the TV seance from the docking module. 1.)

SFE-OM (2. When you come in here, take with you - take 4 cartridges with you. Did you understand?)

SCDR-CM (Roger. Over.)

14 44 36 CMP-OM Okay. So anyway, Bo, we're about to start eating, and we'll eat with knives and forks and spoons, just the way you would down on the Earth. Most of the food will stick to the spoon well enough, and things that won't, of course, will be eaten out of the tubes, or, like the bread, will be eaten in bite-sized bits. All in all, it's a very convenient setup up here. With that, unless you have any questions, I think we'll press on and eat.

CC-H Roger. Thank you, Vance.

ACDR-CM Okay, Bo. If you look on TV, you see Alexey eating some soup. In fact, it's potato soup.

CC-H Roger. We've got a picture of Alexey eating there.

ACDR-CM How's the soup, Alexey?

CC-H Apollo, Houston. We're going to finish our TV here, and we would like you to go down to panel 181 and turn the three TV power switches off.

ACDR-CM All righty. You want it off now, right?

CC-H Roger. But we would like them back on before the VTR coverage of the transfer.

ACDR-CM Okay. When will that take place? Is that in the Flight Plan?

CC-H That's about 74:55.

ACDR-CM Roger. 74:55, Bo.

SCDR-CM Houston, this is Soyuz commander. How do you read me? Hey, Bo, how do you read me?

14 46 37 CC-H (I read you well.)

SCDR-CM Okay. Houston, just now - right now, Tom, Deke, and me are in the Apollo spacecraft. We fill with lunch; it is a good lunch. I like it very much, but it is mostly the same. The best part of a good lunch is not what you eat, but with whom you eat. Just now I eat my space food with my very good and very nice old friends, Tom and Deke. Before I have beautiful dinner on Apollo spacecraft - in Apollo spacecraft. I have potato soup, strawberry, and steak, bread, and the cold tea. I like it very much.

14 47 46 CC-H (Very good. I read you very well.)

ACDR-CM Did you get that on the tube?

CC-H Negative. Unfortunately, we didn't see that on TV, but we did understand it quite clearly.

ACDR-CM Okay. Good.

CC-H Apollo, Houston. We think that the earlier problem with the communication may have been that the Soyuz was not properly configured for the transmission of Leonov's voice down here.

ACDR-CM Okay.

CC-H Apollo, Houston. We think that it may have been in mode that they talked over Madrid.

ACDR-CM Roger.

14 51 20 CC-H Apollo, Houston. There are 2 minutes until ATS LOS. We'll have you at Wallops at 74:40.

ACDR-CM Okay. And I'll get those TV cameras off, Bo.

CC-H Thank you.

ACDR-CM Right now Alexey is finishing his dessert; he's eating strawberries.

14 51 41 CC-H Understand.

END OF TAPE

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Time: 199:15:00 to 199:16:30
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ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

15 01 06 CC-H Apollo, Houston through Wa - Wallops for approximately 5 minutes.

ACDR-DM Roger. Through Wallops.

15 04 50 CC-H Apollo, Houston. There is approximately 1 minute until LOS. Next AOS is Santiago at 75:10.

15 28 53 CC-H Apollo, Houston through Santiago on a short pass; ATS is at 75:17.

ACDR-DM Roger. Hey, Bo, this is Tom.

CC-H Go ahead, sir.

ACDR-DM Okay, I'm in the docking module working on step 2 of the third transfer. Do you want us to go up here and - and go through this ch - checklist, as far as removing these samples?

CC-H Roger. We'd like you to do everything as in the checklist nominally.

15 29 24 ACDR-DM Okay. The temperature's 29 degrees and the FURNACE COOL light's on, so we can go do it.

CC-H Roger. And I have one deletion for you - on step 11 on D/4-8 - you can eliminate all those references to TV 11-1.

CC-H Apollo commander, did you copy that?

ACDR-DM I got it. I've already got it marked out.

CC-H Okay. The only thing is that you do have to stand by for their AOS.

15 30 10 ACDR-DM ..., Bo.

15 39 14 CC-H Apollo, Houston through ATS. How do you read?

ACDR-DM 5 by.

CC-H And, Apollo, we would like the three TV CAMERA POWER switches on panel 181 turned ON.

ACDR-DM I think they're all ON, Bo.

CC-H Understand.

ACDR-DM Thought they were.

SFE-OM Apollo, Soyuz. How do you read me?

ACDR-DM (Excellently, Valeriy.)

SFE-OM Apollo, Soyuz. How do you read me?

ACDR-DM (I hear you excellently, Valeriy. Stand by.)

SFE-OM What step are you doing now?

ACDR-DM (...)

15 40 33 SFE-OM Apollo, Soyuz. What step are - step are you doing now?

ACDR-DM (... Valeriy.)

SFE-OM Please, Apollo. What step are you doing now?

ACDR-DM (Step 2.)

CC-H Apollo, Houston. Over.

ACDR-DM Go ahead, Bo.

CC-H I'm - I'd like to check and see if the transfer time was started on schedule.

ACDR-DM Yeah, it was. We started the transfer time on schedule. We had to go back and pick up the furnace sample and sign in a couple of books and things.

CC-H Roger. Understand.

ACDR-DM Okay?

CC-H Roger. We're coming up on 14 minutes transfer time.

ACDR-DM Roger. We'll be making it up.

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CC-H Roger.

15 45 31 ACDR-DM Okay. Hatch 2's closed. (Hatch 2's closed ...)

ACDR-DM (Valeriy, Vance, now I'm working on step 7 in the docking module.)

CMP-OM (Step 7.)

15 46 22 SFE-OM Soyuz tunnel 2 pressure equalization.

DMP-CM ..., Bo, are you reading okay?

CC-H Roger, Deke. We read you all right.

DMP-CM Okay. Yeah, I got mixed up. Our commentary says ...

15 47 04 ACDR-DM (Soyuz, this is Apollo. I am now beginning pressurization.)

15 48 00 ACDR-DM Okay, Bo. We're pressurizing the DM.

CC-H Roger. Copy.

ACDR-DM (Soyuz, this is Apollo. Pressure in the docking module up to 490 millimeters.)

ACDR-DM Bo, this is Tom. How do you read?

CC-H We read you all right, but we've lost our TV picture.

ACDR-DM Yeah, I noticed the monitors were jumping around in here in both the cameras here in the DM.

CC-H Roger.

15 51 01 ACDR-DM I mean the image in the monitor is jumping around.

CC-H Docking module, Houston. Over.

DMP-CM Go ahead, Bo.

CC-H Hatch 2 has been doing well today and with your concurrence, we suggest that you - eliminate or cut short the hatch 2 pressure integrity check.

DMP-CM Sounds great. I'm ready to press on.

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DMP-CM (Soyuz, this is Apollo. Step 8's completed. How's your step 9? Over.)

CC-H Apollo, Houston. Could you tell us which camera you have in MASTER, please?

ACDR-DM Did you call me, Bo?

CC-H Roger.

CC-H Apollo, Hous - -

ACDR-DM ... you have an echo.

CC-H Apollo, Houston. Could you tell us which camera's in MASTER at this time?

ACDR-DM You got a horrible echo. Are you calling the command module or the docking module?

CC-H Docking module, which camera is in MASTER at this time?

DMP-CM The - the Soyuz is in MASTER, Bo.

CC-H Roger. Thank you.

DMP-CM Hey, Bo. Per checklist, the one in the command module's also in MASTER. I guess they all can't be, right?

15 54 23 DMP-CM Hey, Bo, command module. How do you read?

CC-H Command module. We would like the command module camera into SLAVE.

15 54 41 DMP-CM Roger. Command module's in SLAVE.

ACDR-DM Okay, Vance. We're ready for you to open hatch 4, number - step number 9.

CMP-OM ..., Tom.

ACDR How you doing there, Vance?

SFE-OM Apollo, Soyuz. ... in step number 9.

ACDR-DM (Roger. Understood.)

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15 57 05 ACDR-DM Okay. (Pressure equalization between the docking module and the Soyuz now.)

15 57 28 SFE-OM Apollo, Soyuz. Hatch number 4, open.

ACDR-DM (Roger. Understood you.)

ACDR-DM (Step 10 complete.)

SFE-OM Roger.

ACDR-DM (I will open hatch 3 when you are ready.)

SFE-OM Roger.

SFE-OM We must await AOS.

SFE-OM (This is Soyuz 2.)

SCDR-DM (I read you well.)

SFE-OM (Moscow, this is Soyuz 2. How is the picture?)

ACDR-DM I'm just standing by here, Vance, waiting.

15 59 37 SCDR-DM (Nothing is happening overhead.)

USA (How is it now?)

ACDR-DM Yeah, we were just talking about the

16 00 20 SCDR-DM (What did you want to say to him?)

ACDR-DM I'm showing Alexey all the fish we have in the docking module.

SCDR-DM (Apollo is ready.)

DMP-CM (Ready to open hatch 3?)

16 01 14 SCDR-DM Roger. (Hatch 3 is open.)

SCDR-DM (I spent the last film on him.)

16 05 30 ACDR-DM (Valeriy, do you need any nitrogen?)

ACDR-DM Houston, how do you read? Docking module.

CC-H Docking module, read you loud and clear.

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ACDR-DM Okay. Up to step 13 now. Looks like we're back on schedule and appreciate the help on the rapid check on hatch 2.

CC-H Roger. I understand. Step 13 on schedule.

ACDR-DM Pardon me, no; it was step 15. I couldn't read this thing. I've already gone through 13. We're up to step 15.

CC-H Roger.

ACDR-DM (All right.)

ACDR-DM And they don't need any nitrogen.

CC-H Understand. No nitrogen required.

16 07 47 ACDR-DM Hello, Houston; docking module.

CC-H Docking module, Houston. Go ahead.

ACDR-DM Everything is going smooth here. Is Lunney around there?

CC-H Roger. He's listening.

ACDR-DM Okay. You might tell that all ... mission - that I just happened to check the roll index angle that we put on, you know, between the command module and docking module.

CC-H Roger.

ACDR-DM It's about as close as you can get it to zero. Maybe it's less than a 20th to a 50th of a degree off.

CC-H Was it better than Apollo 10, is his question?

ACDR-DM Yeah. (Laughter) In other words, the zero line is just darn near splitting the other index line.

CC-H Roger. He copies.

USA (Laughter)

SCDR-OM (Comm check at 19:24.)

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16 15 43 ACDR-OM Houston, Apollo. How do you read me over in the orbital module?

CC-H Apollo commander, read you 5 by in the orbital module.

ACDR-OM Roger; Bo. Read you 5 by. All connected up in the comm over here in the OM.

CC-H Understand.

SFE-OM Deke, how do you read me?

DMP-CM (Excellently, Valeriy.)

USSR (This is Soyuz. How do you read? Over.)

CC-H Command module, Houston.

DMP-CM Go ahead, Bo.

CC-H We would like the CM1 and CM2 POWER, OFF, on panel 181.

16 18 36 DMP-CM Okay. CM1 and 2 coming OFF.

ACDR-OM Yeah.

SFE-OM Vance, how do you read me?

CMP-DM (I read you excellently.)

SCDR-OM (Valeriy, how do you hear me?)

SCDR-OM (Valeriy, how do you read me? I don't read you now.)

16 23 30 ACDR-OM Houston, Apollo.

CC-H Apollo, go ahead.

ACDR-OM Okay, Bo, sounds like Valeriy's having the same trouble Alexey had this morning. He can read everybody, but he can't transmit. But Vance and him are going to press right on through the transfer.

CC-H Roger, Tom. We'd like to get the voice checks here before you close the hatch in case we are going to change out a headset.

ACDR-OM Roger. Will do.

CC-H And, Tom. Just for a check, would you give us a short count?

ACDR-OM Roger. 1, 2, 3, 4, 5, (5, 4, 3, 2, 1. How did you read that?)

CC-H (We heard you right. Thank you.)

SCDR-OM Houston, this is Soyuz commander. How do you read me?

SFE-DM I read you loud and clear.

SCDR-OM I give you short count: 1, 2, 3, 4, 5, (5, 4, 3, 2, 1. How do you read me?)

16 24 33 CC-M (Thank you, loud and clear.)

SCDR-OM How do you read me?

ACDR-OM Loud and clear. How me?

SCDR-OM Hey, I read you loud and clear, too ...

ACDR-OM Okay. I'll check with Moscow. (Moscow, how do you read me? This is Apollo commander.)

ACDR-OM Houston, this is Tom. In the Flight Plan, you want us the check with Moscow, too? Over.

CC-H That's right. I heard you call, but I didn't hear Moscow answer.

16 25 13 ACDR-OM (Moscow, Moscow. How do you read me?)

CC-H (Moscow, this is Houston. How do you read? Over.)

ACDR-OM (Moscow, Moscow, this is Apollo. How do you read now?)

ACDR-OM Bo, I don't get them anyplace. Maybe we're configured wrong back on the command module, I don't know.

CC-H Negative. We're not reading Moscow either.

ACDR-OM Okay.

CC-H We're checking the ground right now.

ACDR-OM (Moscow, Moscow. This is Apollo. How do you read?
Over.)

ACDR-OM Moscow, Moscow, this is Apollo. How do you read me?
Over.

MCC-M (Soyuz, this is Illarionov. How do you read me?)

SFE-DM (Valeriy, Soyuz 2. I hear you well.)

MCC-H (Soyuz, this is - On 19, you have - you're using
the hand button and also try to - Moscow can't hear
Tom. Turn on the mike power on the control panel
if it's not turned on. And also take your hand
control because Moscow at home can't hear Tom.)

SFE-DM (Roger.)

MCC-H Turn on mike power; mike power's turned on. Is
there a light aboard - intercom on. Moscow should
be hearing you. Let Tom ask - try to get in touch
with Moscow again.)

ACDR-OM (Moscow, Moscow, this is Apollo. How do you read
me?)

16 28 57 CC-M Apollo, this is Moscow. Read you loud and clear.
How me? Over.

ACDR-OM Roger. (Yes, I hear you excellently.)

CC-H (Moscow, this is Houston. How do you read me?)

CC-M Loud and clear. How me?

CC-M (All right. Our tests have been completed. You
can start your tests.)

MCC-M Leonov, this is Moscow. How do you read?

16 29 39 SCDR-OM Roger. Hatch 4 is closed.

CC-M (Good.)

MCC-M Soyuz 1, Soyuz 1, this is Moscow. How do you read?

SCDR-OM Moscow, this is Soyuz. I hear you loud and clear.

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MCC-M Roger. (I also read you well.)

SCDR-OM Okay.

ACDR-OM Hello, Bob. How is it going?

MCC-M Good, Tom, good.

MCC-M Deke, docking module, docking module pilot. This
is Moscow. How do you read?

DMP-CM (I read you excellently. How do you hear?)

MCC-M (Deke, I also hear you well.)

CC-M Soyuz 2, Moscow. How do you read? Over. Soyuz 2,
this is Moscow. How do you read? Over.

ACDR-OM (Alexey, are you ready to dump pressure in tunnel
2?)

SCDR-OM ... just a moment, just a moment.

CC-H Apollo, Houston. There is less than a minute until
LOS. AOS will be at 07:13, which is in
about 2 minutes.

DMP-CM Okay.

END OF TAPE

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Time: 199:16:30 to 199:18:00
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16 30 14 ACDR-OM Okay. (Roger. I understood you.)

16 32 28 SCDR-OM Deke, hatch number 4 is closed. Ready for tunnel
2 depressurization.

CC-M (Soyuz, this is Moscow. Soyuz, this is Moscow.)

SCDR-OM (Standing by, Moscow.)

CC-M (Hear you excellently. Second comm check with
Houston MCC and the U.S.S.R. specialist group at 20:18
Moscow time. How did you receive? Over.)

CC-M (Soyuz, this is Moscow. How did you receive? Over.)

CC-M (Soyuz, Soyuz, this is Moscow. How did you read
second comm check at 20:18?)

SCDR-OM (We received.)

CC-M (Soyuz 1, we hear you normally. Second comm check
at 20:18. Over.)

SCDR-OM (I've already given you the readback many times.
Second time check 20:18. Over.)

CC-M (Well, you just now came through to us. Before
that we couldn't hear you.)

SCDR-OM (Did you hear Soyuz 2?)

CC-M (No, Soyuz, we did not.)

CMP-DM (I am initiating integrity check of hatches 3 and 4,
Alexey.)

SCDR-OM Okay.

SCDR-OM (Moscow, this is Soyuz. How do you read me?)

CC-M (Soyuz, this is Moscow. Excellently. How do you
read me? Over.)

SCDR-OM (You didn't hear Soyuz 2?)

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CC-M (Not - negative. We did not hear him.)

16 37 03 SCDR-OM (But there won't be any comm there because now I have no communication with that point.)

CC-M (Roger.)

SCDR-OM (I couldn't handle the TV coverage. For some reason it couldn't work there.)

CC-M (Roger.)

SCDR-OM (Right now, Soyuz 2 is asking for you. Do you hear him? You don't hear him?)

CC-M (No, we don't. But if you are getting the signal, Soyuz, then the idea is should it come here, too.)

SCDR-OM (I hear him very weakly. Very weak.)

CC-M (Roger. Soyuz, this is Moscow. There's a request for you. Don't forget after you finish work to finish - to turn off the VHF AM whenever necessary.)

SCDR-OM (Roger. I heard it.)

16 38 26 CC-H Apollo, Houston. There are just a few seconds until LOS. We'll see you at Quito at 76:44.

16 38 33 ACDR-OM Roger. 76:44, Quito. Thank you.

17 05 01 CC-H Apollo - Soyuz. Apollo, Houston, through Houston.

ACDR-OM Roger, Bo. Reading you loud and clear.

CC-H Roger. This is the Quito pass. I know you may not have been able to bring a note over from Apollo; do you need any help?

ACDR-OM (No.)

ACDR-OM You want us to go ahead?

CC-H Roger. You can go.

17 05 40 ACDR-OM Roger. This is the Apollo-Soyuz crew. We want to say hello to the people of Ecuador and also particularly to the President Rodriguez. Also, to the

American and Soviet Ambassadors, who are at the site. We want to thank you so much for the wonderful help and support that you have given the Apollo-Soyuz Test Project. We've looked down upon your wonderful country, your beautiful country, many times, and we hope that someday we have the opportunity to visit there.

17 06 37 CC-H Command module, Houston. When someone has a chance, on panel 181, we would like the CM CAMERA TV POWER, ON, CM CAMERA 2 TV POWER, ON.

SCDR-OM Right now, Tom Stafford and me in orbital module of the Soyuz spacecraft. We are crewmen - on Soyuz-Apollo spacecraft. We are sending our best wishes to the people of Ecuador. Thank you very much for your attention.

ACDR-OM Deke, you want to say hello in there?

ACDR-OM Hello, Houston; Apollo.

CC-H Apollo, Houston. Go ahead.

ACDR-OM Roger. Did the voice relays get through?

CC-H We heard your greeting and Alexey's also, and we heard them loud and clear.

ACDR-OM All right. Good.

CC-H Command module, Houston.

DMP-CM Yeah, go ahead, Bo.

17 08 12 CC-H Command module, when someone has a chance, we would like, on panel 181, CM CAMERA number 2, TV POWER to ON.

DMP-CM Yeah, I got your message on that, but I've still got to get the camera connected.

CC-H Okay, and - has Valeriy's comm been good?

DMP-CM Yeah. Seems to be.

CC-H Fine, thank you.

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17 09 41 CC-H Apollo, Houston. Less than a minute until LOS,
Bermuda at 76:52.

17 10 20 CC-H Command module pilot, Houston. How was the check
of tunnel 2?

17 12 41 CC-H Apollo, Houston ...

DMP-CM Okay, Bo. We have the power on down there now and
we'll need ...

SCDR-OM Valeriy, do you read me?

SFE-CM I read you well. How you read me?

SCDR-OM Okay. I read you well.

SFE-CM Well?

SCDR-OM Very well.

SCDR-OM You want to drink some juice, Valeriy?

SFE-CM Yes.

SCDR-OM What about beer?

SFE-CM Sure.

17 13 40 DMP-CM You still with us Bo?

CC-H Roger. Still here.

DMP-CM Okay. Did you hear Valeriy that time?

CC-H Roger. As soon as we get ATS coverage, we'll start
the comm checks with the Soyuz, and we'd appreciate
it if you'd give us a call when you in the Apollo
are ready for the comm checks as well.

DMP-CM Okay.

CC-H And command module pilot, Houston?

DMP-CM He's not hooked up yet, Bo.

CC-H Roger.

DMP-CM ...

CC-H Apollo, Houston. If you were calling, you were broken up. Please say again.

DMP-CM Okay. Vance is ready to start ...

CC-H We still not - cannot read you, Apollo.

DMP-CM Roger, Bo.

ACDR-OM Houston, how do you read me in the orbital module? Over.

CC-H We read you with an echo, Tom; how do you read us?

ACDR-OM I read you loud with an echo. Over.

17 17 15 CC-H Command module, Houston. On panel 10, we would like you to turn the PHONE/MIC INTERCONNECT switch OFF.

DMP-CM Okay, it's OFF.

CC-H Apollo commander in Soyuz, Houston. How do you now read?

ACDR-OM I still read you with an echo now, Bo. However, I didn't hear myself; give me a short count.

CC-H 1, 2, 3, 4, 5, - Houston out.

ACDR-OM And you still have the echo.

CC-H We're reading you much better.

17 18 02 CC-H Command module, Houston. Could we have you check the S-band thumbwheels on panel 10 to full decrease.

DMP-CM It's full decrease.

CC-H Apollo commander in Soyuz. How do you read Houston now?

ACDR-OM Roger. Read you loud and clear with no echo.

CC-H Roger.

MCC-H (Soyuz, this is Illarionov. How do you read me?)

MCC-H (I don't hear you. Soyuz, this is Illarionov. How do you read me?)

SCDR-OM (Valeriy, this is Soyuz. I read you excellently.)

CC-M (I also read you well. Your picture was well liked here.)

SCDR-OM Okay. (Laughter)

SFE-CM (Houston, this is Soyuz 2. How do you read? Over.)

MCC-H (Soyuz 2, this is Illarionov. I hear you excellently. Give me a count.)

SCDR-OM One picture together with Valeriy Illarionov from - for mission ...

17 19 50 SFE-CM Houston, Apollo ...

SCDR-OM - - Apollo spacecraft. Tom Stafford sit down on docking module. Deke Slayton - -

17 19 58 CC-H Apollo commander, Houston.

SCDR-OM ... behind you. ...

SFE-CM (How do you read the count? Over.)

SCDR-OM - - Vance Brand - -

ACDR-OM Go ahead, Bo.

CC-H You seem to be on hot mike there.

ACDR-OM We're on hot mike?

CC-H No, I'm sorry; it was Alexey who was broadcasting.

CC-H Docking module pilot, Houston. How do you read Houston?

17 20 28 DMP-CM Roger. Read you 5 by, Bo.

CC-H We read you weakly. Could you move your mike so that you may be speaking more directly into it, sir?

DMP-CM That any better?

CC-H That is better.

DMP-CM Okay.

CC-H Command module pilot, Houston. How do you read?

DMP-CM They don't hear you transmitting.

CC-H Command module pilot, Houston. How do you read?

CMP-CM I read you loud ...

CC-H Vance, you came through well at the beginning of your transmission, but then you cut out in the middle of the word.

DMP-CM He's reading you fine, Bo. How do you read him now?

CC-H Roger. We read you, but we do not read Vance at all.

CMP-CM Okay.

CMP-CM How do you read, Bo?

CC-H That time we read you clearly. Could we have a short count?

17 21 45 CMP-CM Rog. 1, 2, 3, 4, 5, 5, 4, 3, 2, 1.

CC-H Roger. Read you clearly.

MCC-H (Soyuz 2, this is Valeriy Illarionov. How do you read me?)

SFE-CM (Valeriy Illarionov, I read you excellently.)

MCC-H (We, too.)

SFE-CM (Roger. Excellent. I've given you a count, did you read it?)

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MCC-H (No - no, we didn't, that's why we asked you again.
Give it to us again, please.)

SFE-CM (This is Soyuz 2 giving a count. 1, 2, 3, 4, 5, 7,
8, 9, 10. How did you read? Over.)

MCC-H (Excellent. Thank you.)

CC-H And command module, as soon as everybody's settled
there, we can get the camera focused, and we'll be
ready to allow Moscow to do their checks.

DMP-CM Okay. Stand by 1; we're still trying to get the
cables tied up here.

CC-H Roger.

17 23 03 CC-M (Soyuz, Soyuz. This is Moscow.)

CC-M (Soyuz, this is Moscow. How do you read? Over.)

CC-M (Soyuz, Soyuz. This is Moscow, for comm. Over.)

SCDR-OM (Moscow, this is Soyuz. I hear you excellently.
How do you read me?)

CC-M (Excellent. Before this, you didn't hear?)

17 23 44 SCDR-OM (Negative.)

CC-M (Roger.)

CC-M (Soyuz 2, this is Moscow. How do you read?)

SFE-CM (Moscow, this is Soyuz 2. I hear you well. How
do you hear me? Over.)

CC-M (Excellent. I hear you excellently.)

MCC-M Apollo commander, this is Moscow. How do you read?

ACDR-OM Roger, Bob. Read you loud and clear. How me?

MCC-M Roger, Tom. Read you loud and clear. Command
module pilot, this is Moscow. How do you read?

CMP-CM Loud and clear, Bob. How do you read?

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17 24 19 MCC-M Roger, Vance. Loud and clear. Docking module pilot, this is Moscow. How do you read me - Deke?

DMP-CM Yeah, I read you 5 by 5, Bob.

MCC-M Roger, Deke. Read you loud and clear. Good comm checks, all three.

ACDR-OM Okay. Okay, Bo. We've had good comm check with Moscow. And we're ready for one with you guys, I guess.

CC-H Roger. We still have a few minutes left until the conference, and we would just like to get the TV adjusted at this time.

ACDR-OM Okay. Tell me what you want with it. I've got it sitting where I thought it was supposed to be.

CC-H Roger. We just lost it on the eidaphore. Hold on 1, please.

CC-H Deke, we'd ask you to take the cue cards down. They caused the picture to bloom.

DMP-CM Copy.

CC-M (Soyuz 1, this is Moscow, for comm. Would you copy, please? To do TV 11.3, at the 54th orbit. To switch on - -)

SCDR-OM (Would you say again, please? You were interrupted.)

CC-M (In order to 11.3 - TV 11.3, at the 54th orbit, turn on TK camera 1. And at 347 - US 347/13 and cable 347/10.)

SCDR-OM (Unclear. Please repeat.)

CC-M (347/10-1 and US 347/10.)

17 26 23 ACDR-OM What do you got there now, Bo?

CC-M (Connect those cables together.)

SCDR-OM (Please don't hurry. We have - we have a big conversation. I couldn't get the numbers down. So don't hurry.)

CC-M (All right. Later.)

SCDR-OM (Connect TK-1 camera.)

CC-H A little more.

CC-M (US 347/10-1 to US 347/10.)

CC-H Another tad.

CC-M (US 347/10-1 to US 347/10.)

17 27 15 CC-H Apollo, Houston. We'd like zoom 15.

SCDR-OM (US 347/10-1 to US 347/10.)

CC-M (US 347/10-1 to US 347/10. Roger. You copied correctly.)

DMP-CM Okay. How's that?

CC-M (After this comm session.)

CC-H That looks pretty good. Just a second, while we - you let the camera settle.

DMP-CM We're getting all that extraneous communication from other places here, too, right now.

CC-H Apollo, Houston. There is a bright spot on your right. If there is a window, we'd appreciate the shade on it.

17 28 27 CC-H And, Deke, while you're close here to the camera, we'd like it to be zoomed in just a bit more.

DMP-CM Getting a lot of echo there, Bo. Could you give me that last one again?

CC-H Roger. While you are in that position, we would like to - you to zoom in a bit more.

CC-H Just a little more, if you can.

CC-H That looks good, Deke.

DMP-CM Okay. And when I get unsnarled up there, we'll be in great shape.

CC-H (Moscow, this is Houston. Our check is completed. Everything's okay.)

CC-M Roger, Houston. Read you loud and clear.

CC-H Apollo commander in Soyuz. We're going to start our press conference now. And we would like to ask you, sir, to begin with a statement, if you would.

17 30 43 ACDR-OM Thank you, Houston. Say a couple of words, here.

17 30 46 MCC-H Could ... the PHONE/MIC INTERCONNECT OFF.

ACDR-OM It's been a most rewarding 2 days here in space working with the Apollo-Soyuz Project. The success of the mission that both the United States, the Soviet Union, and the rest of the world has seen is the results of the determination, the cooperation, and the efforts by the governments of the two countries, by the managers, engineers, and all the workers involved. It's been a very rewarding experience. Yesterday, when I first opened the hatch and said hello to Valeriy and Alexey, I had a couple of thoughts. However, due to communications, we could not - talk to them directly. The thoughts were that when we opened this hatch in space, we were opening back on the Earth a new era in the history of man. I would have said (we were opening back on Earth a new era in the history of man). How this new era will go depends on the determination, the commitments, and the faith of both the peoples of both countries and of the world. I'm sure that it will work out in the future for good. Again, it's been a real pleasure to be on the mission and work with the cosmonauts. I'll turn it over to Alexey.

17 32 16 SCDR-OM Okay. The representatives of two countries are conducting the joint Soviet-American flight because our people and our government want to work together in spirit of cooperation because a lot of experts in America and in the Soviet Union did a great job to make this flight possible. This work became possible in the climate of detente and a developing cooperation between our countries. This is why it is an important step on the endless road of space exploration by joint effort of all mankind.

ACDR-OM Okay, Bo. We're back to you.

CC-H Roger. It's Moscow's turn to ask the questions that have been proposed by the press there.

CC-M Thank you, Bo. (Soyuz, this is Moscow. First question to the Soyuz Flight Engineer Kubasov. You were the first welder in space. Do you foresee the establishment of a permanent orbital station, through the efforts of all interested countries, based on the principle of equal benefit for all nations?)

SFE-CM (Do you have a picture, Moscow? This is Soyuz 2.)

CC-M (Yes, we do. It's a good picture.)

SFE-CM (Roger. And indeed, during the flight of spacecraft Soyuz 6, I had occasion to do the first welding in space. Today and yesterday, we took part in an experiment on the multipurpose furnace. One experiment as well as the other are in the area of space metallurgy. I think that this area has a great future. It seems to me that some time will pass, and mankind will have many new metals, many new alloys, with new qualities. We'll be obtaining these materials in conditions, which could never be created on the Earth, but which could be available only in space. And it seems to me that the time will come when space will have whole plants, factories, for the production of new materials and new substances with new qualities, which could be obtained or made only in space.)

CC-M (Thank you, Valeriy.)

17 35 43 MCC-M The second question from the Soviet Press Center is for Deke Slayton. Deke, do you read?

DMP-CM Yeah, go ahead.

MCC-M Deke, you flew over Europe during the war. How does this continent look to you from outer space, now? Over.

DMP-CM Well, it's mighty beautiful from up here; I'll tell you that. Unfortunately, we haven't had enough time to look at it - particularly over the continent of

Europe. There's been a lot of cloud cover, and we've been very busy. In the next few days, we hope to do more of that. But the little of it we've seen is downright beautiful. I just wish everybody down there could have the opportunity to come up and see it for themselves.

MCC-M Thank you very much, Deke. The third question from the Soviet Press Center is for Vance Brand. Vance, for 3 days now, you have not heard any news. What kind of news would you like to hear from us journalists? Over.

17 36 48 CMP-CM Naturally, I'd like to hear good news instead of bad news. For example, it'd be nice to hear that everything is more peaceful in many areas of the world, that the world is truly coming together as - right at this moment, as we really believe it is, over a course of several years. We think since the program started that the world has been getting smaller. We would like to see, at the same time, good news result from that - in a political and international sense, throughout the world.

MCC-M Thank you, Vance.

CC-M (The next question to the Soyuz spacecraft commander, Alexey Leonov. Where in your homeland would you like to plant the seeds for the trees, which you are supposed to be exchanging?)

SCDR-OM (I was born in Siberia and grew up there. So, in my conscience, the most beautiful tree, the most long lasting tree and the most undemanding tree is the fir. And this type of tree constitutes the - the major type of tree of our Earth and brings the greatest benefit to the - to all humanity. So probably we should plant the pine and the fir.)

CC-M (Thank you. The next question to Valeriy Kubasov. You have children; what would you like to wish to them from space, as well as all the children of the world?)

17 38 44 SFE-CM (Well, of course, we would like to wish happiness to all children, so that their future would be a good one, so that this - their future would be a peaceful one, so that they would always live with

their parents and - in happiness, so that they would never lose their fathers and brothers as occurred during the last war. I would like to wish to all the children who are now alive, who now live on the Earth - the majority of them are school children, now they're on vacation - I would like to wish them a good vacation, so that they will gather their strength for the upcoming studies in school. That's the end of the answer.)

CC-M (Thank you.)

17 39 38 MCC-M The next question is for Tom Stafford. Tom, taking into consideration the existing world problems, in your opinion, are the expenses connected with the space flights justified? Over.

ACDR-OM Understand completely; a question that has been asked many times. Certainly in reviewing the data, we think that - in fact, we know the cost is justified in, number 1, the scientific effort that we have put out; number 2, the great benefits that are going to be derived from this from both countries. In fact, the total efforts - the total benefits that'll be derived in the end will far outshadow the costs that have been spent upon it. Over.

CC-M Roger, Tom. Thank you very much for that.

CC-M (And one more question to Alexey Leonov. Could you transmit to Earth a sketch that would depict the meaning, the essence of your - of the joint mission in space of your two spacecrafts?)

SCDR-OM (Well, it's probably quite difficult to do this very quickly right now, but I could transmit this drawing. This drawing was made a long time ago. This image.)

CC-M (Excellent. Thank you.)

SCDR-OM (As far as the question, is to say. I have done many of the drawings here. For example, here's Tom Stafford. Does it look like him?)

17 41 36 CC-M (Very much. Very excellent. Thoughtful.)

SCDR-OM (Now I'll show you a very complete - a very young Stafford. Here he is, younger.)

CC-M (Excellent; exceptional.)

SCDR-OM (And one other person from Texas. This is our friend Deke Slayton. But the portrait of Vance Brand; I just gave it to him and he is not here. So you see, here's a whole cosmic portrait gallery in space. Thank you very much.)

CC-M Bo, we are finished. Thank you. Go ahead.

17 42 28 CC-H (Thank you.) The first question is for Tom Stafford. How do you evaluate the operation of the Soyuz crew, during the first days of the flight?

17 42 42 ACDR-OM Well, my evaluation of the Soviet crew, during the first day of the flight, has been very good. As you know, these are lot of long, complicated, and very tedious procedures that we've had to go through in these transfers, a lot of interface that's taken a long time to work out. And things have gone very well. Yesterday we ran a little longer than we expected but, again, they had a lot of extra food for us to eat and, also, the calls from the head of the Soviet Union and the President of the United States delayed us a little bit. But, overall, the cooperation has been outstanding and their procedures have been wonderful. Over.

MCC-H (The second question is to Valeriy Kubasov. What contribution can the experience gained on this flight be made - make in - to the - into future cooperation in space between the - the Soviet Union and the U.S.S.R.[sic]? In other words, what new things have you learned in the last few days which could be useful in the future to astronauts and cosmonauts?)

SFE-CM (First of all, we found out that we can work together in space and cooperate. If - until this time, we had only been preparing for it - training it. Now we have tested it out in practice. Yesterday and today have proved to us that at the time of our meeting in space - during our rendezvous, our docking, and now during the time of joint activities - we accomplished it all. And this is the most

important thing. This proved that we can work together; we can cooperate in space and, secondly, we checked out and proved that the docking system works - that it works as it was designed. In other words, that the technical ideas that had been - and the technical design and the ideas that had been used have proven themselves. Yesterday this was also proven. Thirdly, of course, we received additional flight experience at the same time on - in two spacecraft. This would give us a great deal in terms of training or preparing for future flights.)

CC-H The next question is for Vance Brand. But before we ask that, we ask that Valeriy Kubasov may move a little to his left and forward, so we can see him better. The question for Vance is the same as the one that Valeriy answered. How might your experiences on this mission contribute to future cooperation in space between the U.S.S.R. and the U.S.A.? That is, did you learn anything in the last few days that would help future astronauts and cosmonauts?

17 46 07 CMP-CM Well, I think the greatest part of our learning, Bo, has been in our training, which preceded this flight and all things considered, I think there's where we learned how to communicate: how to plan our training, plan the various aspects of this flight. Upon getting up here - in space, we did run into surprises, but only minor surprises as a result of our training. I think - I've learned a lot - I think, of course, that if we had another joint flight someday that I'd find it much easier to approach, and if somebody else was on this flight, I'd have a lot of suggestions for him. And I'd certainly recommend such a thing, incidentally.

17 47 06 CC-H Thank you.

MCC-H (The third question to Leonov - Alexey Leonov. How comfortable do you consider the Apollo spacecraft to be and how do you like the American food?)

SCDR-OM (Today, I have spent 6 hours aboard the spacecraft Apollo in flight - in space, but before this I had been aboard this spacecraft many times before in training. And as a pilot, as a cosmonaut, I like this spacecraft very much. Its appearance, its

maneuverability, its capabilities, but of course the Apollo has proven itself already that it's a reliable spacecraft, which makes it possible to accomplish many difficult missions. And even the most difficult mission, which is - involves flying around the Moon and even partially a landing mission. Today I saw it - how it looks in space flight. I like its capabilities for making observations. There are a sufficiently large number of windows to observe the Earth and its equipment. Today, in our flight, I had to do a TV report about space food from onboard the Apollo spacecraft, but for technical reasons it didn't come through because there was no communication. But I can say that the food, which I selected way back on Earth, was the same here and I liked it very much. I liked the way it's prepared, its freshness, and also with the - in the terms of attention paid by the crew. But once again, I'd like to say that space food is not the same food, which is eaten by people on Earth, no.) But as an old philosopher says, "The best part of a good dinner is not what you eat but with whom you eat." Today I have dinner together with my very good friends Tom Stafford and Deke Slayton because it was best part of my dinner.

MCC-H Thank you very much. (Thank you, Alexey.)

CC-H The next question is for Deke Slayton. Now that you have finally made it into space, how do your experiences compare with all the stories the other astronauts have been telling you for years?

17 50 59 DMP-CM Well, I'm afraid I haven't discovered anything new. It's been pretty much the same. We've had the same kind of problems up here that people have complained about since MR-3, I guess. Not enough space, and a little congestion to the time line, difficulty in keeping up with things. It's just a lot slower getting things done up here than you realize when you're down there in one-g. Everything takes a little longer. In some respects, it's easier because weighty things are easier to move around, but, on the other hand, everything just tends to take off if you let go of it. So - but it's been a great experience. I don't think there's any way anybody can express - how beautiful it is up here. I've listened to it for 13 or 14 years now, and I still don't think there's

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any way that any of us can express it properly. And as I said earlier, I surely wish it was possible for a whole lot more people down there to come on up here because I think it'd make for a lot better world.

CC-H Thank you, Deke.

MCC-H (The next question is to - is for Alexey Leonov. What type of space flight would you like to participate in the future?)

17 51 24 SCDR-OM (I am deeply convinced that all of us now - those that are flying aboard spacecraft and those who are not flying, but who are watching and listening to us - all of us are participants of only the beginning of a great human journey into outer space, and there will be all kinds of various space missions in the future. Of course, I would like to once again to be aboard some other spacecraft, which would be able to fly for a long time around the Earth so that with the eyes of an artist I could see the multi-faceted appearance of our Earth in very varied colors and appearances to forever retain it into memory and to give it to people. But also we would like - I would like to be at altitudes higher than we are now. From there, the Earth looks completely different. I think that at the beginning of our journey - I think that I am at the beginning of my journey and still we have - we have still a reserve of strength and age and I think we will participate in future space missions.)

17 52 46 CC-H The next question is for General Stafford; it's the same as the one Colonel Leonov just answered. What kind of mission would you two like to fly in space yourselves?

ACDR-OM Well, you're talking about the next mission. I would think, naturally, with the background in flight tests that you'd always like to fly a new and a better and a more modern device, and we have one coming along called the Shuttle. I would certainly like to fly that. And I would hope that if Alexey would have a vehicle developed by their country that we could fly maybe in a joint mission. And that would be my - my wish: since man's progress has always been a geometric progress and the benefits derived from science and technology has always helped all of mankind - I

would hope that the next mission - say if I do fly one - will be one of the more modern type of vehicle that could have more benefits for everybody.

SCDR-OM (And I also agree with Tom and I'd like to say that it's - the spacecraft is one thing, but another thing is with whom you're flying and I'd - this is what I'd like to point out, that I would always like to fly in space with friends to whom one trusts and who trusts in one and with whom it is not dull to work with.)

CC-H The next question is also for General Stafford. From a practical standpoint, did you find talking to each other in the listener's native tongue a desirable way to communicate during the complicated rendezvous and docking maneuvers?

17 54 27 ACDR-OM (Of course, it is very important.) I say, of course, it was necessary again. We developed this technique out of working together over a period of nearly a year, and that was over a year and a half ago that we determined that, if we would listen to the other person speak in your own tongue, the individual would speak slower, also more distinctly, and would make fewer mistakes. And so it worked out beautiful as you saw in the rendezvous, and the end results you saw on television, and what you're seeing now. It's also been a great experience for us as far as a - way of communicating with each other. Over.

MCC-H (And the last question to Alexey Leonov. How do you think that - how important do you think the rescue capabilities that was demonstrated on this flight will be in future space missions?)

17 55 28 SCDR-OM (We - when we began working on the Apollo-Soyuz Program, the first part of our program was the working out of a rescue system and of a single, androgynous docking unit and testing of that unit. And now we can say that we have done - we have completed the major part - basic part of this program. We have tested these docking units. They work well and they hold us together tightly - strongly. This was the beginning of a large effort in standardizing future systems not just with both our governments or both our countries because future spacecrafts of our country and of the United States would use such units.

But we suggest that other states - other countries which will dev - begin developing in this direction, we suggest that they should also have standardized docking units, so that they would be able to perform any kind of service and render any type of assistance to other crews in space. And it is pleasant to us that the beginning of this great grandiose human effort in space has been initiated by our crews here - by our crews of the spacecraft Apollo and the crew of the spacecraft Soyuz.

MCC-H (Thank you very much.)

17 57 02 CC-H The next question is for Vance Brand. Now that Americans have met Russians in space on an international venture for the first time, what do you think the chances are for a joint manned exploration of a planet?

17 57 18 CMP-CM Well, I think, frankly, that the chances are very good, but I don't think it will happen right away. They say that - well, it would probably take at least 20 or 30 years before we would be ready as a world to go out and explore a planet. I think that's probably reasonable. The only thing, in everything else that we have done, in aviation, for example, we've found that progress was always much faster than we expected. So perhaps the time will come when we will be thinking of exploring planets, probably together - within the next 20 years. I think that would be the way to do it. I think it would save us time, effort, money; it would pool resources, it would - in other words, it would be interesting and it would bring ben - bring back benefits to the whole world.

MCC-H Thank you, Vance. The last question is for General Stafford. And it is the same as Colonel Leonov just answered, and that is how important do you think the rescue capability demonstrated on this flight will be in future missions?

17 58 38 ACDR-OM Well, when - as long as you have motion, you're going to have accidents. Needless to say that - we do all our - our utmost efforts to minimize all the risk. However, after a long period of time, you could conceivably and possibly have some mishap that would require a rescue. The total system we have demonstrated here - the new docking device, the rendezvous

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system using techniques from both countries, the communications procedures and techniques - could be available in the future if required. Not on an instant's notice, but it could be available. So I think we have taken a great step, that indeed we have opened a new era in the history of man on this, and it will be beneficial. Over.

17 59 26 MCC-H Roger, Tom. Thank you. That was the last question. I'll now bring the press conference to a close and you gentlemen can get back and continue your work. (Press conference is over. Thank you.)

MCC-H (Good flight.)

SCDR-OM Thank you very much.

MCC-H (Thank you.)

END OF TAPE

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Time: 199:18:00 to 199:19:30
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ASTP-AIR-TO-GROUND VOICE TRANSCRIPTION

17 59 57 SCDR-OM Valeriy, how do you read me?
SFE-CM Loud and clear. Thank you.
SCDR-OM Okay.
CC-H Command module, Houston.
DMP-CM Go ahead, Bo.
CC-H On panel 181, we would like the three TV POWER switches OFF.
18 03 56 CC-H Command module, Houston.
DMP-CM Yeah.
CC-H Roger. We've been having some problem with one of the TV cameras, and we would like to take the TV camera that is now on 871 in the DM and substitute it for the camera that is now in the TSB, which will go into bracket 11 for the tour.
DMP-CM Okay, you want to use the 871 camera on panel [sic] 11.
CC-H Roger. There is a camera now in the TSB that's going onto 11, and we would like the 8 - camera that's in 871 to go onto 11.
18 04 37 DMP-CM Understand.
CC-H And you'll have to disconnect them and hook them up again as they are swapped.
CC-H And, Apollo, those cameras may be a little warm, so you may have to hold off for a few minutes before you can change them out. And we have one other thing, and that is TV 2.9, the shoe should be on the right instead of the left.
DMP-CM Okay, 2.9. Stand by and let me check that.
CC-H That's the one that's going to be looking out the window.

18 05 26 ACDR-OM Hey, Vance, I'm - -
 DMP-CM Okay. Shoe on the right.
 ACDR-OM Apollo, how do you read?
 CC-H Houston reads you loud and clear, Thomas.
 ACDR-OM Deke, how do you read?
 DMP-CM I read you fine, Tom.
 ACDR-OM Okay. The battery finally went dead on the Nikon
 flash. When you come over on transfer 4, will you
 or Vance, either one, dig out a spare battery for
 the Nikon. Yeah, I think it's in B-5.
 DMP-CM Yeah. I think you're right. Okay.
 ACDR-OM Thank you.

18 06 10 ACDR-OM Bo, how's the weather back in Houston?
 CC-H I'll have to ask somebody; I haven't been out in
 quite a while. (Laughter)
 ACDR-OM Yeah, I could imagine; I could imagine.
 CC-H And we'd like the PHONE/MIC CONNECT switch ON.

18 06 33 DMP-CM MIC CONNECT to ON. Okay. Stand by.
 CC-H And we're just about to go LOS. We'll be AOS at
 MILA at 78:21.

18 06 49 DMP-CM Copy.

18 08 18 CC-H Apollo, Houston through Wallcps. How do you read?

18 08 28 MCC-H He reads us.

18 09 05 CC-H Apollo, Houston through Orroral. How do you read?

18 41 25 CC-H Apollo, Houston through MILA. Over.
 CMP-CM Roger, Houston. How do you read?

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CC-H Roger. We read you loud and clear. We need the CAMERA switches ON, on 181.

18 41 41 CMP-CM Okay. We have all three ON.

CC-H Roger. We're not getting any TV here yet. We should in a second, and I can tell you about the picture.

CC-H Command module pilot, Houston. We have about a 90-second wait here, until we get a warmup. Let me give you a bit of a weather briefing. Florida looks like it'll probably be clear, as will New York, but there are quite a few clouds over the middle At - Atlantic coast.

CMP-CM Okay.

CMP-CM Okay. I can see the coast of the U.S. coming up.

18 43 32 CC-H Vance, we're getting a good picture. You're clear to start your tour.

18 43 38 SFE-CM (Good day, dear friends. We find ourselves now on spacecraft Apollo. The American astronaut, Vance Brand, Deke Slayton, and I are in the command module.)

CC-H Command module, Houston. We need the PHONE/MIC CONNECT switch to ON.

SFE-CM (Right now, Vance Brand will tell you about American territory on which we are flying.)

18 44 12 DMP-CM Okay. We got the PHONE/MIC ON, Bo.

CC-H Okay.

18 44 20 CMP-CM (Moscow, this is Soyuz. How do you read me? Dear television viewers of the Soviet Union. At the present time, we're going to make a little tour over the eastern part of the United States. This is a 6-minute tour, since we're flying with the speed of approximately 8 kilometers a second. This part of the United States is - about 200 years ago - this place developed about 200 years ago. Here, most of the industrial concentration of the United States is located. It's composed now of 50 - the United States is composed of about 50 states, and it will start with Florida. At the present time, we're flying

over sunny Florida. It's a very warm climate in Florida - about - over 300 sunny days a year. There's much exotic forms of nature, a lot of citrus fruits. In this peninsula, there are many palms, citrus groves, and various other types of growth. Also, many alligators and crocodiles. Here, there is located the Kennedy Space Center. Among all the flights that took off from the Kennedy Space Center we, also, took off - on this flight. It's very difficult to see the Earth at the present time, because there is some cloudiness below us. At the - in the middle of your screen, we see North Carolina. Only 72 years ago, the first airplane flew in this state. At the present time, in the horizon, we see the Blue Ridge Mountains. On the right, there is the State of Virginia.)

18 47 44 USSR (Apollo, this is Soyuz.)

CMP-CM (The State of Virginia is a very historical state - the site of many battles, the birthplace of many presidents. In the 17th century, the first settlements appeared in the State of Virginia. We now can almost see Washington, to the left of us. Of course, this is the Capitol of the United States - the political and cultural center of the United States. To the left - now, there is - you can see New York, the largest - one of the largest cities in the world. Around us, also, we see several other states: Massachusetts - the Goddard Space Center. In 1920, Dr. Goddard flew one of his first rockets - experimental rockets. We hope that the cooperation and understanding between our two countries is developing with the same speed as the speed that Dr. Goddard's rocket first flew. Thank you for your attention and for listening to us on this tour.)

18 49 47 CMP-CM You still there, Bo?

CC-H Thank you, Vance. You came through loud and clear. Unfortunately, there were quite a few clouds there, and we couldn't see an awful lot of the east coast.

18 49 55 CMP-CM (New England to the North and in the center of our screen, we saw a lot of cloudiness, so we couldn't really tell you enough.)

CC-H (Thank you very much.)

CMP-CM Roger.

SFE-CM Thank you very much, Vance.

18 50 21 SCDR-OM (I got you. Be nice for us to get a geologist in here, so you could measure some of the things we see.)

SCDR-OM (I couldn't understand you. Why don't you repeat that?)

SCDR-OM (I'm repeating again. 3:37 MILA, 3:47 ...)

SCDR-OM (That's good, okay.)

SCDR-OM (You want Valeriy, right?)

18 51 44 SCDR-OM Valeriy, how do you read me?

SFE-CM (Very broken. Read you well.)

SCDR-OM (How do you read me, Valeriy?)

SFE-CM (Read you well.)

SCDR-OM Okay.

SCDR-OM (I'm listening.)

18 52 19 CC-H Command module, Houston. Standing by for ATS acquisition.

CMP-CM Okay. You should have it, Bo.

SCDR-OM (We had a connection 347 hooked up. 347/10.)

CC-H And, Apollo, Houston - -

SCDR-OM (347/10. We had two connectors hooked up. I connected TK-1 to the connector 347/10.)

18 53 15 CC-H Apollo, Houston. We'd like to remind you to go to P00 at this time.

18 53 27 CMP-CM Okay, you have P00.

CC-H Thank you.

SCDR-OM (Kubasov, Kubasov, Valeriy.)

SFE-CM (Yeah, who's calling Soyuz 2?)

SCDR-OM (Kubasov.)

SFE-CM (Yeah, who's calling Soyuz 2?)

SFE-CM (What's the matter?)

SCDR-OM (I am Soyuz. I am calling you.)

SCDR-OM (Listen, did you connect TK-3 connector to J-box?)

18 54 51 CC-H Command module, Houston.

SCDR-OM (Roger.)

CMP-CM Go ahead.

CC-H Just a reminder - -

SCDR-OM (Moscow, this is Soyuz. How do you read me?)

SCDR-OM (When I came over there. I connected our TK-3 and mounted it there. Then I returned it to another mount, but I didn't disconnect the connector according to the documentation.)

SCDR-OM (I wasn't supposed to do it anyway. Did you copy? Moscow, how did you copy?)

18 55 49 CMP-CM Gee, Bo, would you try again. You were cut out earlier.

CC-H Roger. It was just a reminder to give Valeriy his meal, so he can take it back to the Soyuz with him.

18 56 00 CMP-CM Rog.

18 56 20 CC-H Apollo commander, Houston.

ACDR-OM Go ahead, Bo.

18 56 26 CC-H I know you don't have a Docking Module Checklist, but on this next transfer, on step number 26, we would like you to delete the steps where you take the DM Soyuz tunnel vent isolation and open it, and a DM

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SOYUZ TUNNEL VENT to VENT. I'll call those out again when we get into the transfer. And the reason is that the Soyuz is going to be performing a check on the tunnel 2 integrity and we do not want to dump the tunnel to vent - to vacuum.

ACDR-OM Okay, Roger. Do you want to take it down just to the normal - pressure? Down to draw pressure minus 260?

CC-H It goes down to 50 and then we'll just leave it there and we'll vent it at some later time.

18 57 12 ACDR-OM Okay, I understand. You just want us to take it to 50.

CC-H Roger.

18 57 20 ACDR-OM Okay, real good.

19 00 59 ACDR-OM Houston, Apollo.

CC-H Apollo, Houston. Go ahead.

ACDR-OM Roger. Did you want to cover this presentation of seeds and these medals on TV? Over.

CC-H Roger. And we see you on TV now.

19 01 56 CC-H Command module, Houston.

USA ...

CC-H On panel 10, we would like to request you to check the S-band thumbwheel to 3.

CC-H Command module, Houston. Over.

CC-H Command module, Houston. That was the FM thumbwheel to 3.

19 02 30 ACDR-OM Okay, Bo. You ready?

CC-H Roger. We can see you holding the box there.

ACDR-OM Okay. (I'm beginning. Allow me to present to you on behalf of the United States of America, to give your people and your government a present of the United States, a present to your people.)

SCDR-OM I am sure good trees must grow from these seeds.

CC-H Apollo commander, Houston. We're not reading Alexey.

ACDR-OM Okay. Say again, Bo. Did you see that?

CC-H We read you, but we didn't read Alexey during the last part of his acceptance.

SCDR-OM (How do you read me?) How do you read me?

CC-H Now we read you, Alexey.

19 04 10 ACDR-OM (Joint medal for the Soyuz-Apollo mission between the United States of America and the Soviet Union.)

CC-H Just hold it for a second, Tom. It's a little bright. Maybe the camera will be able to pick it up. We can see that it says Apollo-Soyuz and it shows the spacecraft.

19 04 45 SCDR-OM (Good evening, dear television friends. It's 22:00 in Moscow time. The terminating final activities are going on onboard our two spacecrafts. Still lower, a little lower. The present time onboard the Soyuz spacecraft we have the Apollo commander, Tom Stafford, and in the Apollo, Valeriy Kubasov, together with Deke Slayton and Vance Brand. Our joint activities are coming to an end and we will have our fourth and final transfer coming up soon. The joint operations include Tom Stafford's transmittal to me of a box of seeds, of very fast and rapidly growing pine trees. They should grow very well and very rapidly in a good climate when they are planted on our Soviet territory. The joint operations also include an exchange of medals. One-half of the medal was placed on the Apollo spacecraft, and the second half of the medal was placed on the Soyuz spacecraft. And now, here together in a orbit of the Earth, we will be connecting these two halves of the medal. The medal is an emblem of our joint flight joined in docked spacecrafts, Apollo and Soyuz, with the two U.S. and U.S.S.R. flags side by side. I'm taking this medal and handing it over to

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Tom Stafford, and Valeriy Kubasov will be taking the other medal from the other spacecraft and bringing it back to us.)

19 07 12 ACDR-OM Okay. (Thank you very much.)

SCDR-OM (What have we done in this time? We had very saturated program - had to do quite a number of operations in a very limited amount of time. We had to do a series of transfers, also watch the systems onboard our spacecraft. All this requires very careful monitoring, very careful observations. Also, at the same time we had to perform a whole series of reports, still pictures, movies. We only had five people here between the two spacecrafts - five crewmembers, and that's really not enough people to do all the things that we had to do, but we had to find a way to do it.)

19 08 23 ACDR-OM Okay, Houston.

CC-H Roger, Apollo. We saw the joining of the medallion. We got a good picture of the medallion in our TV.

ACDR-OM Okay. Command module, say again.

SCDR-OM (Who turned it off? We really shouldn't have anything bother anybody.)

19 09 32 ACDR-OM Vance, how do you read?

19 09 39 ACDR-OM Deke, how do you read?

19 09 48 CC-H Apollo commander, Houston. We read you.

ACDR-OM Okay. I was just trying to get through to see if the - Deke and Vance are putting the medallion together with Valeriy. They want - we were going to say something on TV and I was listening to ...

CC-H Roger.

19 11 09 CC-H Command module, Houston.

CMP-CM Go ahead, Houston.

CC-H We see you there with the medallion and we'd like to have the filter adjusted so that the couch lights don't blossom in the picture.

CMP-CM (Yeah, we don't have the filter.)

CC-H (Roger.)

CC-H And, command module, Houston. We'll be standing by for the clock sync in 3 minutes here.

19 12 50 CC-H Command module, Houston. We didn't hear you; although you looked like you were talking to us here just a minute ago.

ACDR-OM Vance, how do you read; I haven't been reading you at all.

CMP-CM Okay, Houston. Reading you loud and clear; and, Tom, reading you loud and clear.

ACDR-OM Okay. I can read you now.

CC-H Roger. We can understand you now, Vance, and we'd suggest you get the clock sync on time and then proceed with some of these other activities.

CMP-CM Okeydoke.

19 15 02 CMP-CM (Soyuz, this is Apollo.)

SCDR-OM How do you read me?

CMP-CM (Good, Alexey. We've got about 50 seconds to time sync.)

CMP-CM (Giving countdown now. 7, 6, 5, 4, 3, 2, 1 -)

19 16 00 CMP-CM MARK.

SCDR-OM We are synchronized.

CMP-CM (That's good.)

CC-H We copied the clock sync.

19 17 09 CC-H Apollo, Houston - command module, Houston.

CMP-CM Go ahead.

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CC-H The lights are - in our picture are blossoming pretty badly, perhaps you could either get the filters on them or block them in some manner.

DMP-CM Filters aren't on, Bo.

CMP-CM We're looking for the big camera filter, Bo.

CC-H Understand.

ACDR-OM Hey, Vance, it was either back on the one in 605 or in F-2.

CMP-CM Rog. Not in F-2.

19 20 09 CC-H Command module, Houston. We ho - heard the Apollo commander before ask for a set of Nikon batteries. To save you the problem of looking up where they are, they're in B-5.

19 20 22 DMP-CM Got you.

19 26 36 DMP-CM Okay, Bo, if you're reading, I got the 35 flash batteries.

CC-H Negative, we did not read, but we do now, thank you.

19 28 32 CC-H Apollo commander, Houston.

ACDR-OM Go ahead, Bo.

CC-H Looks like you're having fun - if you'd like to tell us about any of the things you're doing, we'd be anxious to hear.

ACDR-OM Oh, okay. Well, we're just finishing up the third period up here, and relaxing a little bit. We've had a wonderful experience here. And Alexey and I are looking at the procedures to go through now. We also had a snack.

CC-H We saw the snack.

ACDR-OM Bo, are you sending the TV over to the Soviet Union at this time? Over.

CC-H Roger. All the TV we get goes to the Soviet Union.

ACDR-OM I'd like to just say hello to the people there.

CC-H I think we've got time.

ACDR-OM Okay. It'll take about a minute or 2.

CC-H Roger. I think we've got the time.

19 29 41 ACDR-OM (Dear Soviet television viewers. Allow me as the representative of the United States of America to send to you best regards from the people of the United States.)

END OF TAPE

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Time: 199:19:30 to 199:21:00
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ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

19 29 59 ACDR-OM (This is a happy time for the whole crew. We're happy, very happy to receive - to be together here in the first international flight after 2 years of joint preparation and training. We astronauts and cosmonauts - not only - not only have worked together, but we've become good friends. I'm sure that our joint work, friendship, will continue, even after this flight. I am also sure, dear television viewers, that this flight will open the way to further cooperation and friendship between our two countries. The - yesterday's - let the things that went on yesterday and today in our flight be a good thing for both of our peoples. Thank you and good luck.)

CC-H (We heard you very well. Thank you.)

DMP-DM Hey, Bo, you read the DM?

CC-H Roger, docking module pilot. Read you loud and clear.

DMP-DM Okay. Which TMs - or TV do you want back in here? We took one out, you know, and I'm supposed to check the monitor, and we've got nothing here right this minute.

19 31 47 SCDR-OM Ladies and gentlemen of the press. You can see with me Tom Stafford, Soyuz - Apollo commander, today in space, in orbital module of the Soyuz spacecraft, the representatives of two countries: Soviet Union and the United States - United States and Soviet Union. We are conducting - we are conducting our Soviet - our joint Soviet/American flight because our people and our governments want to work together in spirit of cooperation between our country, because many experts in the America and in the Soviet Union did a great job to make this flight possible. We worked together during - for 2-1/2 years. We know each other very well. I know Tom Stafford, Deke Slayton, and Vance Brand are very hard-working guys. We like to work together again. Before our joint flight, we were a lot of times in the United States and the American astronauts were a lot of times in the Soviet Union. Every time we knew each other better and better. We know a lot about America, American people, about American customs. We know

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what the American people want. I am very glad that today we work - we are working in space together with our good friends, Tom, Deke, and Vance. I'm sure that our joint flight is the beginning of very great cooperation in space. Thank you very much.

CC-H (Thank you very much, Alexey.)

CC-H Docking module pilot, Houston.

DMP-DM Go ahead, Bo.

19 34 27 CC-H Deke, we would like you to place the camera in the position of 871 where you got the old one out.

DMP-DM Yes, but which one?

DMP-DM You just want to replace the one under 71 that was there?

CC-H The one that was in the TSB that should have gone on position 11 - -

ACDR-OM Hey, Deke, what step you doing now?

CC-H - - should go into 871, because you took the one from 871 and put it in 11.

DMP-DM Okay. I thought you wanted the TSB ... because you thought it was a bad camera.

CC-H Roger; it is. But we think it will work better in the DM.

DMP-DM Okay.

SCDR-OM Deke, how do you read me?

DMP-DM (Excellent, Alexey.)

SCDR-OM What are you doing now?

DMP-DM (First ...)

SCDR-OM (How do you read me?)

CC-H Command module, Houston.

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Page 3

19 37 30 DMP-DM Go ahead, Bo. Vance is ... I'm in the DM.

CC-H This is for the command module. We are going to have a couple minutes of data here. We're finished with the TVs. We would like you to go down to 181 and turn the TV POWER switches, OFF.

19 38 11 DMP-DM Okay, Bo. For your information, I'm hooking up this - this 871 TV to DML.

CC-H Command module pilot - or docking module pilot, say again, please. You had quite a bit of back-ground noise.

DMP-DM I'm hooking up this TV on 871 to DML TV station.

CC-H Understand. You're putting it on 871.

DMP-DM Yeah, that's where you said to put it.

CC-H And we've got about a minute and a half until we go LOS. We're going to be at Vanguard at 79:31. That's about 36 minutes transfer time, and if the command module did not hear, we would like the TV POWER switches OFF.

19 51 47 CC-H Apollo, Houston through Vanguard for 7 minutes, standing by.

DMP-DM (Soyuz, Apollo. I'm beginning ...)

DMP-DM (Soyuz, Apollo.)

ACDR-OM Go ahead, Deke.

DMP-DM (I'm beginning ...)

ACDR-OM Okay.

DMP-DM Okay. (Soyuz, Apollo. Docking module pressurization to 490 millimeters.)

19 54 23 SCDR-OM Docking module pressurize to 490 millimeters.

SFE-DM Roger.

SCDR-OM Deke, ... Soyuz. Tunnel 2 pressure equalization ... 7 - 7 minutes.

DMP-DM (Right.)

19 56 54 DMP-DM Houston, Apollo.

CC-H Apollo, Houston. Go ahead.

DMP-DM Yeah, Bo. You want to pass on this hatch 3 integrity check again?

CC-H Apollo, Houston. We don't think you can gain any time by deleting it, since Soyuz is going to be doing their pressurization.

DMP-DM Roger.

20 17 54 CC-H Apollo, Houston through Rosman. Over.

CMP-CM Roger. Loud and clear.

CC-H We have you for a couple of U.S. stations and then ATS.

CMP-CM Okay.

ACDR-OM Hey there, Bo. We're all over the DM here or OM, rather - -

SCDR-OM (Laughter) Houston ... (laughter), Houston ...

ACDR-OM - - with the old microbial exchange.

CC-H Roger. Understand. You're in the microbial exchange.

ACDR-OM Right.

CC-H Apollo, Houston. There are 30 seconds until LOS. We'll pick you up at Newson - Newfoundland for a few seconds and then ATS.

20 19 12 CMP-CM Okay, Bo.

USA ...

20 21 35 CC-H Apollo, Houston. Through Newfoundland and then ATS.

CMP-CM Okay, Bo.

DMP-DM ... step 16, Bo.

USA ...

CC-H Roger, understand. Step number 16 and if you have a DM Checklist in your hand, would you go to page 5-16, step 26.

DMP-DM Go ahead.

CC-H Deke, did you answer me? I thought I heard you very weakly.

DMP-DM Rog. Standing by for your info on step 26.

20 22 22 CC-H Roger. Where it says, "AC DM SOYUZ TUNNEL VENT ISOLATION - OPEN and DM SOYUZ TUNNEL VENT - VENT." Cross those two steps out, temporarily, and the Soyuz crew will give you an okay to vent the tunnel to vacuum.

DMP-DM Okay, we do that later ...

USSR-OM ...

USA Yeah.

CC-H They'll give you that okay later - perhaps 20 minutes or a half hour later.

DMP-DM Okay.

DMP-DM Good.

USSR-OM ...

USSR-OM ...

DMP-DM ...

USSR-OM ...

USSR-OM (Another time, listen to me.)

20 23 48 SFE-OM (... step - I'm going to give you the exact information one more time. Do you read me? In 2 steps. First, 6 minutes, nominal 10. Within 6 minutes, second step. In 20 minutes, nominal 1 millimeter within 6. Everything is normal. Inform Apollo about the hatch integrity and close the hatch.)

SFE-OM (At what time did you say?)

DMP-DM (... 00 - 00 - 54:01:09.)

20 24 49 CC-H Command module pilot, Houston.

CMP-CM Go ahead, Bo.

CC-H In your Flight Plan down on page 4.2-34 - -

SFE-OM SW transmitter 1, SW transmitter 2.

CC-H - - there's a note to roll left to 60 degrees. We would like to change that to 100 degrees.

SFE-OM (We will be ready.)

CMP-CM Roger. At 80:54 roll left 100 degrees instead - instead of 60.

SFE-OM (What? What?)

CC-H. Roger.

SCDR-OM (Roger. We were receiving.)

SFE-OM (Who received?)

SFE-OM (We'd like to sleep some more, but we don't have the time. Last night we only got 5 hours actually. It's okay. We feel pretty good.)

20 27 06 CC-H Command module, Houston. On panel 181, we would like the three TV CAMERA switches ON.

20 28 12 CC-H Command module, Houston. We would like the three TV CAMERA POWER switches on panel 181 turned ON.

20 28 20 CMP-CM They're ON, Bo.

CC-H Thank you.

CMP-CM All ready.

SFE-OM (Yes, Soyuz. We're experimenting ... with ... nitrogen.)

CC-H And, Vance, we're getting a good picture of you there in the command module.

CMP-CM Okay.

20 29 57 ACDR-OM *** Okay.

ACDR-OM *** Okay, Bo. We're hooking up the TV cameras in the orbital module to DMI on the docking module.

CC-H Thank you for the report.

USSR-OM ...

USA Give way to the ...

20 31 49 ACDR-OM Hey, Bo. The significance of switching these things is that we've got 2 hooked into 1 and vice versa from what the checklist called for after we got through with the switching around here. So, this is not the right cameras, but they're going to reach in different - -

CC-H ...

ACDR-OM - - DM positions.

ACDR-OM Okay. DM2 POWER's ON and that's the power that goes into the orbital module 1, Bo.

CC-H Roger. Understand.

ACDR-OM I'm sorry, it's DMI - DMI goes into the orbital module now.

20 32 33 CC-H Understand.

USA ***

20 34 49 ACDR-DM Bo, how do you read me now?

CC-H Apollo commander. We read you fine.

ACDR-DM Okay, I'm hooked up back on the docking module audio.

CC-H Understand.

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USSR ...

20 35 30 CC-H Command module, Houston.

CMP Go ahead.

20 35 36 CC-H On panel number 10, we would like to check the VHF FM thumbwheel, no higher than 3.

CMP Okay, you're echoning - echoing but understand on 9 and 10. The VHF - VHF FM thumbwheel's on 3?

CC-H Negative. On panel 10 - panel 10 only - VHF thumbwheel on 3.

USA Thank you.

CMP Okay, you're echoing bad - echoing badly, but I took that to mean on those two panels VHF thumbwheel on FM on 3.

CC-H Negative, only on 10.

20 36 24 CMP (Very good.) Thank you.

CC-H And the S-BAND thumbwheel all the way decrease.

CMP Which thumbwheel?

CC-H S-BAND, decrease.

20 36 49 CMP Very good, S-BAND decrease. It's already there - full decrease.

CC-H Roger. Copy.

20 38 58 CC-H Command module, Houston. Are we still echoing?

CMP No, you just got rid of it, Bo.

CC-H Thank you.

ACDR Sound good now, Bo.

CC-H Thank you.

20 42 08 CC-H Docking module, Houston. Are your televisions set up yet, so that we can turn on the TV in the DM?

ACDR Roger. You're all set.

DMP Yeah, they've been up for a while, Bo. They're already turned on.

CC-H Thank you.

CC-H Command module, Houston.

CMP Go ahead.

20 42 53 CC-H On panel 181, we'd like you to check or verify that the CM/DM CAMERA POWER switch is ON.

CMP Okay.

20 43 11 CMP Yeah, that's verified. It's ON.

CC-H Thank you.

CMP TV STATION SELECT is on CM, however. Would you like that - UP TELEMETRY?

CC-H Roger. We'd like that to UP TELEMETRY.

20 43 29 CMP You've got it.

CC-H And, docking module, we have a good picture.

DMP Okay.

20 47 30 ACDR (Goodby.)

MS (Goodby.)

DMP (Goodby.)

DMP (We wish you the best of success. We hope we've opened a new era in history of man.)

SCDR Good luck.

DMP (Our next meeting will be on the ground.)

DMP (Step 20, Valeriy.)

20 50 03 SFE 20 is completed.

DMP Hey, Vance, do you read us?

DMP Vance, you read?

CMP Yes, I read. Go ahead, Deke.

20 50 40 DMP Okay, got to do a little reconfiguring here.
Panel 6, VHF FM to RECEIVE; AM, OFF; AUDIO CONTROL,
NORMAL; verify POWER, OFF.

CMP Okay. It's in work.

20 51 19 CMP POWER coming OFF now.

20 52 43 DMP Okay, Vance. At panel 6, have FM, T/R; AM, T/R,
POWER ...

DMP (Two shutters.)

20 56 39 ACDR (Yeah, this is your step.)

ACDR Okay, Bo. Valeriy is working on their hatch
getting things set up for the UVA eclipse.

CC-H Roger. Copy.

20 56 49 ACDR Solar eclipse.

END OF TAPE

Day 199

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

21 00 13 ACDR Okay, they're closing hatch 4.
CC-H Roger. We see it on TV.

21 00 57 DMP Gentlemen, it's closed.

21 00 58 ACDR Hatch 3 is closed. (Hatch 3.)
DMP Yeah.
CC-H Roger.
ACDR Vance, you read?
DMP Vance, you read - read us? Hello, there.
ACDR Vance, how do you read? Vance, you read?
USSR (...)

21 01 49 ACDR (Soyuz, how do you read me?)
CC-H Houston. Read you.
CMP How do you read, Tom?
ACDR Loud and clear, Vance.
CMP Okay. I assume you got the ca - cable disconnected okay.
ACDR Yeah, right - -
DMP Yeah.
ACDR - - we got the cables disconnected. We called you.
CMP Okay, we must be out of configuration. Didn't get it.
ACDR Okay. Vance, would you set MASTER on the CM camera?

21 03 33 CMP Rog. MASTER on the CM.

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21 04 32 CMP Houston, Apollo.
ACDR Houston - -
CMP Houston, Apollo.
CC-H Apollo, Houston. Go ahead.

21 04 50 CMP Roger. I have P52 results for you.
CC-H Apollo, Houston. Go ahead.

21 04 56 CMP Okay, stars 33 and 35; NOUN 05, all balls; NOUN 93, plus 00.129, minus 00.084, minus 00.088; and it was torqued at 43:00.
CC-H Roger, I understand. 3, 35; all balls; plus 00.129, minus 00.084, minus 00.088; and that was torqued at 080:43:00.
CMP Roger.
ACDR (Soyuz, this is Apollo. We're getting ready to dump the pressure in tunnel 2. Over.)
SCDR We are ready.
ACDR (Read you.)

21 06 45 ACDR (I'm beginning the dump.)
CMP Hey, Tom. I've got the probe and the drogue in the tunnel. When you come through, we might temporarily put them in the DM so we got a little working room here.
ACDR Yeah, I think that's a great idea. Let's go ahead and we'll - we'll stow them up here for tonight. What do you think?
CMP Super idea.
CC-H Apollo, Houston. We're going to terminate the TV here until we can get some data for this last few minutes before LOS. Would you please flip the three POWER switches on 181, OFF.

21 08 19 CMP Roger. Switches going OFF, Bo. See you soon.

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Page 3

ACDR Okay. Did you finish dumping the pressure? Yes?

DMP ... 4.60 millimeters ...

21 09 26 ACDR (Valeriy, Alexey, this is step 24. Yes, yes, I am continuing the dump.)

ACDR Bo, we're taking it down to 50. I heard somebody say "Enough! Enough!" And I thought he meant us.

21 10 03 CC-H Tom, you're - you are supposed to take it down to 50.

ACDR That's what I thought. That's what we've calculated.

CC-H Apollo, Houston. There are 2 minutes until LOS. We'll see you at Vanguard at 81:04.

ACDR Roger, Bo.

21 12 25 CMP (Soyuz, this is Apollo. How do you read me?)

SCDR (Real good.)

CMP (I'm beginning the maneuver for solar orientation.)

SCDR Okay.

21 12 40 CMP Okay.

21 24 54 CC-H Apollo, Houston through Vanguard for 5-1/2 minutes.

ACDR Roger, Bo. We're in the middle of the purge now.

CC-H Say again, Tom. You were very low.

ACDR Roger. We're purging the DM now. We'll be able to drop the pressure shortly.

CC-H Understand. You're purging the - the DM.

21 27 43 CC-H Docking module, Houston. Have you heard from the Soyuz concerning their integrity check?

ACDR Roger. They said theirs was good.

CC-H Understand.

ACDR But we're just going to stand by with that pressure we got in there until we hear from them. You know,

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as far as dropping the rest of the way. That's no problem. We'll go ahead. We're going to equalize with the command module shortly.

CC-H Roger. We agree.

CC-H Apollo, Houston. There is less than a minute until LOS at Vanguard. We'll see you at Goldstone at 81:22.

21 29 44 ACDR See you at Goldstone.

21 42 28 CC-H Apollo, Houston. Hello at Goldstone for 6 minutes.

ACDR Hello, Dick. How are you?

CC-H Hi, Tom. I'm doing great. How about you?

ACDR It feels good to be back here, and I had a good day today.

CC-H Oh, I can tell that. Every time I turned on the radio or watched the TV, somebody was passing the word around the country about you five guys. It sounded real good.

ACDR Well, the time line worked out pretty good. It was crowded as the dickens, and the spacecraft was full, but it was all done.

CC-H Well, that's super. It looks like we're real squared away.

21 43 12 ACDR Right now, Deke is strolling the drogue up through the docking module. I'm holding the probe, and we've got (laughter) hatches and boxes in the tunnel.

CC-H Okay.

21 47 44 CC-H Apollo, Houston. Just for our information, we were wondering if Alexey has called over yet and told you that it was okay to dump tunnel 2 after their second integrity check - for the second part of it.

ACDR No, all he said was - he acknowledged that our integrity check was okay. I'll check. I'll recheck with him again.

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CC-H Okay, there's no hurry. We were just LOS for a while and we'd noticed the time was getting about that time where you might have heard and we were just wondering. And, Apollo, Houston. We're 30 seconds from LOS. Give you a call at Newfoundland in about 5 minutes.

ACDR Okay, and I'll check with him, Dick.

21 48 22 CC-H Okay.

21 54 21 CC-H Apollo, Houston. Newfoundland for 7 minutes.

21 54 54 CC-H Apollo, Houston. AOS in Newfoundland for 2 minutes - for 7 minutes, excuse me.

ACDR Roger.

CC-H And, Apollo, Houston. Just so we can keep our records straight, wonder if we could verify a couple of switches. One is on panel 181. Like to verify that the TV AMPLIFIER has been put to BYPASS.

21 55 45 CMP That's verified, Dick.

CC-H Okay. And the other one is - when we had data, which we don't have right now here at Newfoundland, it didn't look like we had started the - or gotten the WASTE STOWAGE VENT valve to VENT. So we'd just like to just verify that those two callouts about 81 hours in the Flight Plan in the CP's column had gotten done.

CMP Yeah, that's done. We have the QD attachment on the waste vent, and the vent is open.

21 56 19 CC-H Okay, real fine. We'll be locking up on the ATS here very shortly. Sometime this evening, I've got a new block data pad for you. So, at your convenience, when you - somebody gets out the Updates Book, I'll be glad to read it up.

CMP Okay, maybe we - -

21 58 57 ACDR (Soyuz, Apollo.)

21 59 03 ACDR (Yes. Okay if I start the pressure dump to equalize tunnel 2 right now? Over.)

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22 00 05 SCDR (... Valeriy. ... astronaut. No.)
SFE (- - Soyuz. How do you read? Over.)
SFE (Yes. We read you. Over.)
SCDR (Over.)
22 05 56 CC-M (Yes, Soyuz. How do you read me?)
22 06 30 CC-H Apollo, Houston. We've been having some discussion on the ground here as to what is causing the echo that you've been hearing. I am presently transmitting simul: S-band through the satellite and VHF through the Madrid tracking station. Wanted to get a voice check with you and see if it's - you've got an echo now.
ACDR We've got a heck of an echo, Dick.
SCDR (Moscow, Soyuz. How do you read me? Over.)
CC-H Okay. Fine, Tom. Stand by.
22 07 18 CC-H Okay. Apollo, Houston. Now we're configured where the VHF uplink is inhibited at Madrid, and I'm transmitting only S-band through the satellite. How do you read and how's the echo?
ACDR You're reading loud and clear, Dick. And there's absolutely no echo.
CC-H Okay. Copy. Thank you very much.
22 12 34 CC-H Apollo, Houston. In looking through the checklist, we thought there might be some things you might want to get ahead on. One that you could get ahead on, if you want, that we're interested in is the waste water dump listed on the next Flight Plan page at about 83 hours, or just before bedtime. We're going to dump the waste water tonight to 50 percent instead of 60 percent, per the Flight Plan, and that's a 7-minute dump. We'd like to watch it on - on while we have data, which we do now. So if you'd like to do it now, give us a MARK, and I'll time it for you. It's a 7-minute dump. Also, we were wondering if you're out of the DM Checklist yet?

CMP Deke is just finishing up on the DM Checklist. And Roger, I'll start that dump in a minute or 2 here, Dick.

CC-H Okay. When you start it, why don't you give me a MARK and I'll be sure and remind you.

22 13 34 CMP Hey, and just an idea. We'd sure much rather use that water with the secondary loop going if you guys would like to get rid of it - some of it that way.

CC-H Okay. Stand by just a second, please.

CC-H Vance, that'd be perfectly okay with us. Why don't you activate the secondary and we'll - we may have to do some dump later on this evening before you go to bed, but we'll recompute it.

22 14 15 CMP Okay. Very good. We'll op - we'll start the secondary ...

CC-H Okay.

22 15 38 CC-H Apollo, Houston. If you'll give us ACCEPT, we'll give you a new state vector and uplink the jet on monitor load.

22 19 20 DMP Dick, you reading us?

CC-H Apollo, Houston. Deke, I think that was you and I barely heard you. Say again.

DMP Rog. I want to give you a little status on the DM here. We started getting MASTER ALARMS with the - both PARTIAL PRESSURES. A and B coming on at the same time. And we've obviously got enough total pressure, and it's stable at about 170, but what's going on is it's glitching periodically and dropping down in the range of 100 to 110, which triggers the lights. So we've pulled the circuit breaker on the C&W in the DM.

CC-H Okay, Deke. Copy.

DMP I pumped in some more O₂ to make sure we had plenty of it in here, and I think it's just a transient thing that's happening to the sensors.

22 20 24 CC-H Okay, Deke. Thanks for letting us know.

22 25 08 CC-H Apollo, Houston. Deke, since you made your call, we've been looking at the PP - PPO₂ and CO₂ - the two partial pressure sensors in the docking module. And they've - they're steady now. What we were thinking about doing, while we have data, was to go ahead and have you push the CAUTION/WARNING circuit breaker back IN, and see if there might be a relationship between that circuit - the CAUTION/WARNING being operable and the two circuit breakers. We are not planning on sleeping this way if it does keep bugging you. But we got about another 20 minutes of data here on the ATS.

DMP Okay, I'll put the breaker back.

CC-H Okay.

22 25 55 DMP That was just a transient from putting the breaker in - -

CC-H Okay.

DMP - - the pressure's still up there.

CC-H Okay.

DMP And, as far as status, Dick, I'm working on the furnace. We're up there for 070.

22 26 21 CC-H Okay, real fine, Deke. Thanks for letting us know. Incidentally, the uplink is complete, but we'd like you to leave the computer in it - the UP TELEMETRY switch in ACCEPT. This is the night you'll sleep with it in ACCEPT, and we'll get the long EMP in overnight. But the computer's yours.

ACDR Okay, understand. Leave it in ACCEPT.

22 26 44 CC-H Okay.

END OF TAPE

Day 199

TAG Tape 199-14/T-45

Time: 199:22:30 to 200:00:00

Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

22 34 03 CC-H Apollo, Houston. I've got some news down here whenever you guys are settled down and would like to hear it. Either - we've got about 10 minutes left here on this ATS pass, and several more passes this evening. So anytime you'd like to hear it, I'll read it up to you.

ACDR Well, why don't you wait until later? We're still busy kind of cleaning up the huge - huge pile here and getting ready for supper. We'll take - we'd sure like some on the next pass, Dick.

CC-H Okay. Why don't you call me and tell me when you're ready. It's just sitting here, and I figured you were busy as beavers straightening up. So just press on with it.

22 34 33 ACDR Okay.

22 43 51 CC-H Apollo, Houston. We're 2 minutes from ATS LOS. We're going to drop out 3 or 4 minutes. And I'll call you at Orroral Valley.

ACDR Real good. Thank you, Dick.

CC-H Okay. See you later.

22 44 03 ACDR Okay.

22 48 05 CC-H Apollo, Houston. Orroral Valley for 4 minutes.

ACDR Roger, Dick.

22 50 35 CC-H Apollo, Houston. We're 1 minute from LOS. Hawaii at 82:45. See you there.

ACDR Real good. Thank you.

22 50 43 CC-H Okay.

23 05 32 CC-H Apollo, Houston. Hawaii for 7 minutes.

ACDR Okay, Dick.

23 10 58 CC-H Apollo, Houston. 1 minute until LOS; Goldstone at 82:57. See you there.

ACDR Roger.

23 17 03 CC-H Apollo, Houston. Short pass at Goldstone for 2 minutes.

CC-H Apollo, Houston. Short pass at Goldstone for 2 minutes.

ACDR Houston, go ahead.

CC-H Tom, we got a real low elevation pass at Goldstone, just a couple of minutes here. We'll pick you up at Newfoundland in about 10 minutes from now.

ACDR Okay. Thank you.

23 28 42 CC-H Apollo, Houston through the ATS. How do you read?

ACDR Loud and clear.

CC-H Okay.

ACDR Dick, everytime anybody's come over the ATS, they've always had an echo. Over.

CC-H Stand by just a second, Tom.

ACDR Now it's okay.

CC-H Okay. Apollo, Houston. How do you read now? 1, 2, 3, 4, 5; 5, 4, 3, 2, 1. Short count, out.

ACDR Loud and clear.

23 29 17 CC-H Okay, fine. I think what was - I think possibly what was happening there is that we also had AOS Newfoundland, and I just didn't give you a call because we were talking about something, and that's VHF.

23 29 33 ACDR Roger.

23 44 50 CC-H Apollo, Houston.

ACDR Go ahead, Houston.

CC-H Tom, we've got about 35 more minutes here in this ATS pass. And I've got a list of things here - not major things, but I wanted to be sure to talk to - start talking to you about them and get a few pieces of information up and down. And we may get through a little bit early. And we were thinking about just saying good night whenever we get through with the list.

ACDR Okay, Dick, but you've got a double - you've got a real echo again.

CC-H Okay. Stand by a second, please.

23 45 43 CC-H Apollo, Houston. How do you read now?

ACDR It's loud and clear. Wait until I get a pencil, Dick.

CC-H Okay. Real fine, Tom.

23 47 19 ACDR Okay, Dick. Everybody's on the headset. Go ahead.

CC-H Okay; real fine. First thing, our data shows that we have not gotten a good purge, even though Vance did a report while ago that the waste stowage vent valve had been opened. It - it may be clogged. We're not sure. Assuming that it is open, what we'd like to do is go ahead and close the waste stowage vent valve. And then we'd like to do - and that combined with the PPO₂ sensor problem or potential problem we had in the docking module. What we'd like you to do is get out the Docking Module Checklist, turn to page 15-1, and in there is a short procedure which is entitled "DM/CM O₂ purge." We'd like you to accomplish that procedure except in st - in the procedure it says "Purge until the PPO₂ is greater than 240 millimeters." But this time you can change that number to 165. That - we want to pump up the PPO₂ to 165 or greater. And at that - and then we'll - what we'd suggest is sleeping with the CAUTION AND WARNING circuit breaker pushed IN. And, Deke, if it wakes you up during the night at all and it's this problem, just pull it out and go back to sleep and don't worry about it.

23 48 44 DMP Hey, Dick, the partial was 170 to 180 when I left it. I've never seen it any lower than that except for those transients.

CC-H Okay. Our data shows 150 now, Deke. You might - -

DMP Okay, well, maybe our gage is - -

CC-H Okay.

DMP Maybe our gage is bad then.

CC-H Okay. While we think about that then, one other reminder for you, Deke, is we want to go ahead and get the furnace started per the Flight Plan there. And the reason we're - want to go ahead and get it started is because the longer we delay, it - it gives us a little problem tomorrow in thinking about the helium injection. Okay, the - the next item that I had is - is that we do want to do a short water - waste water dump. What we want to do is dump the waste water for 4 minutes, and if you'll go ahead and start that any time and give me a mark, I'll time it for you.

ACDR Okay, that should work right away.

23 50 11 CC-H Okay. Another thing out of the presleep checklist you might do for us is give us a VERB 74 and also read us down the battery readings - that's bat C and the two pyro batteries, the voltages.

23 50 25 ACDR Okay. VERB 74 coming at you now.

DMP Okay, BAT C is reading 37, PYRO A is 37, and PYRO B is 37.

CC-H Okay. Sounds real good. Just a second; let me look down my list here.

CMP Okay.

CC-H Okay. I got two pieces of - of things I need to get up to you. One is, I want to read to you a block data pad that's - so you need the Updates Book. And the other one, I've got some changes that I want to put in the Flight Plan Supplement under - in the section that has Vance Brand's meals in it.

Day 199

TAG Tape 199-14/T-45
Page 5

ACDR Under Vance Brand's meals. Okay, hang on a minute.

CC-H Okay, real fine.

23 51 14 ACDR We're starting the dump now.

CC-H Okay, I'll call you back when to secure it. Thank you.

23 51 50 DMP Okay, Dick. I've got the supplemental, and I'm on Vance's pages here ...

CC-H Okay, fir - the comment, Deke - the first one is on page 1-26.

DMP Okay.

CC-H Okay, over there in the left column for day 5, meal A, after "Breakfast roll," add the number "2" and then delete the item below it, "Raisin and spice cereal."

DMP Okay. Copy.

23 52 34 CC-H Okay, down in - down in meal B after "Salmon," add the number "2" and then down in meal Charlie, delete "Fruit cocktail."

DMP Okay; got those.

CC-H Okay. Now on the next page, Deke, I want you to make the same changes exactly to day 9, meals A, B, and C.

DMP Okay.

CC-H Okay. That's got that, and again, the other thing I have here is a block data pad for the Updates Book.

ACDR Okay, Dick. I've got that.

23 53 13 CC-H Okay. If you're ready to copy, I'll start with NOUN 33. I'm - I'm sorry, Tom. I'm sorry, Tom. We - -

ACDR Okay.

CC-H Are you ready to copy?

ACDR Go ahead.

CC-H Okay.

ACDR Yeah, go ahead.

23 53 34 CC-H Okay. Starting with NOUN 33. 129:38:34; minus 198.9, plus 000.0, plus 021.3; 004, 331, 352; 182.0; 00:08; 198, 1560.2, 25773, 25:52; 27:05. The second item there, the NOUN 66, is NA; bank angle 297/042, 32:35, 35:36; plus 14.75, minus 164.25. And, Tom, before you go ahead and do your readback, we're at the point where we can stop the waste water dump.

23 55 20 ACDR Okay, WASTE WATER DUMP, OFF.

CC-H Okay. Understand you've secured the WASTE WATER DUMP, and I'm ready to hear the - -

ACDR ... Vance is at work on the ... That one was in work. Sorry.

CC-H Okay; fine. Now - and I'm ready for the readback.

ACDR Okay. 129:38:34; minus 198.9, plus all balls, plus 021.3; 004, 331, 352; 182.0, 00:08; 198, 1560.2, 25773, 25:52; 27:05. NA. 297/042, 32:35, 35:36; plus 14.75, and minus 164.25. Over.

CC-H Okay. Good readback. Incidentally, I forgot to tell you, this is for rev 78. And I've got three remarks for you on the pad. Number 1, it's an orbital REFSMMAT. Number 2, the CM/SM sep is yaw right to 0.37 degrees. And note 3 is a NOUN 48, the trims - or pitch trim is plus 0.11, yaw trim, minus 0.63. And the weights are as follows: CSM, 26650; docking module, 4620. Over.

23 57 14 ACDR Okay. Readback rev 78, orbital REFSMMAT, CM/SM sep yaw right, 0.37 degrees. NOUN 48: pitch, plus 0.11; yaw, minus 0.63. Weight: CSM, 26650; DM 4620. Over.

CC-H Okay. That's a good readback. I missed one thing in the Flight Plan Supplement on the meals, but it's not important to get it up tonight. If you still have the book there, I'll give it to you. Otherwise, I'll catch it later.

Day 199

TAG Tape 199-14/T-45
Page 7

DMP I've got the book right here. Go ahead.

CC-H Okay. Again, it's still in the same section. It's in Vance's, and it's - the first one is for day 7, which is on page 1-26, Deke, up there in meal Alfa.

DMP Okay. Rog, go ahead.

CC-H Okay. Stand by just a - oh, okay. Excuse me. Okay. Day 7, meal Alfa, you need to put a "2" after the "breakfast roll." And do the same thing again on the next page to day 11.

DMP Okay.

CC-H Okay, let me get off the line here a second. I think that's almost all the official things I have. I do have some news here in a second, but let me come back to you.

23 58 37 ACDR Okay.

END OF TAPE

Day 200

TAG Tape 200-01/T-46

Time: 200:00:00 to 200:00:37

Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

00 00 01 CC-H Apollo, Houston. That's all the official business we have. We got about 20 more minutes left in the - in this ATS pass, and I've got some news here if you'd like to hear it.

ACDR Okay, go ahead. And we'll start this DM purge in about 10 to 15 minutes or so.

CC-H Okay, Tom. Fine, and I'll - and, well, I'm - you'll get the rest of the items in the presleep checklist and the Flight Plan, I'm sure. So, no problem. Well, first of all, the big news here today was you guys. You dominated all the news meder - media all day. All three network news programs this evening had Apollo-Soyuz featured on them, and the press coverage was - was very complete. And they're just - they followed all your activities as I'm sure that they will tomorrow.

The House has passed and sent the White House a bill extending Federal price controls on domestic oil. Under the bill passed yesterday, price controls expiring August 31st would continue through the end of the year. President Ford, however, is expected to veto - to veto the bill. The U.S. Department of Agriculture predicted a small buildup of the world's depleted food stocks in the coming year, thanks to a record crop estimate of almost 10 billion tons of wheat, corn, and other cereals. Administration officials citing statistics released by the Commerce Department say the worst recession since World War II has ended and ended between April and June and a recovery has started. The White House Office of Management and Budget has recommended dropping the F-15, excuse me, the F-18 fighter program and has ordered the United States Navy to develop a new and low-cost plane. An exhibit of American home furnishings and gadgets has opened in Moscow to large, enthusiastic crowds. Called "Technology for the American Home," the exhibit is designed to give the Soviets an idea of life in the United States. Also, it was released today that a record number of tree seedlings were planted in Texas during the year. And we're reminded of that since you guys exchange tree seeds on orbit today. Over 51 million tree seedlings were planted in Texas during the past year.

On the sports scene, the Phillies took the Astros 6 to 5 in the season opener Thursday night, and it was our Astros 60th loss of the year. In the American League, the Oakland A's picked up ground on both their closest rivals in the Western Division, while the Red Sox gained a full game on their second-place rivals in the Eastern Division. The A's now lead by 9-1/2 games in the west and the Red Sox by 5-1/2 games in the east. Rod Curl owned the first-round lead in the 200 thousand Pleasant Valley Classic Golf Tournament. He made six bogies - excuse me, he made six birdies and a bogie Thursday for a 5 under par 66 and a single-stroke lead over Miller Barber.

Last item in the news today is that wide receiver Bobby Hayes, who was the double gold medal winner in the 1964 Olympics and a 10-year NFL veteran, Thursday was traded by the Dallas Cowboys to the San Francisco 49'ers in exchange for an undisclosed high-draft choice. That's the end of what I had here in front of me for the news tonight. Deke, one thing that I wanted to mention to you - and that was that your sister-in-law who's - is - who was in the midair accident down at the Cape remains in very good shape. She's recovering nicely. She is in the hospital in Rockledge, Florida, and is going to be released in the next couple or 3 days. She was able to watch the launch out the window of the hospital room. And - and for all of you, your families are doing real fine. They enjoyed the launch very much and naturally are very interested as the days of the mission go by.

00 04 19 DMP Thank you, Dick.

ACDR Thanks a lot for a complete report, Dick.

ACDR Dick, and it's also been - -

DMP ...

ACDR - - a real long day as you can tell, and - I also want to thank you for all the work you did on getting these joint activity things going when you came on-board.

Day 200

TAG Tape 200-01/T-46
Page 3

CC-H Well, thanks, Tom, very much. Today sure pl - panned out right. I was gone all day of course, but when I got in here and saw you guys after this long day - were exactly on schedule, I know it'd gone well.

00 05 39 CC-H Apollo, Houston. It has been a long day. We - I got two reminders, and then I'm going to go ahead and sign off, and I'll just be standing by for the rest of this ATS pass. We want to make sure we deactivate the secondary evaporator prior to you going to bed. The procedure's page 1-18 of the Systems Checklist. Also we want to be sure and turn off the secondary loop pump. We'll - we have about - -

ACDR We ...

CC-H We have about 13 or 14 minutes left in this ATS pass, and I'll be sitting here standing by, but I won't make any more calls. So you guys get squared away and go to bed, and we'll see you bright and early in the morning.

CMP Okay, Dick. We'll see you in the morning.

00 06 23 CC-H Okay. Good night, all of you.

00 06 28 DMP Okay. Buenas noches.

00 17 48 CC-H Apollo, Houston. We can still you're - see that you're still up because we can see the purge going on in the DM. I just wanted to be sure and remind you to get the furnace started.

00 17 58 ACDR Okay.

END OF TAPE

Day 200

TAG Tape 200-02/T-47
Time: 200:02:02 to 200:03:28
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

02 03 37 CC-H Apollo, Houston talking at you through Guam for 3 minutes. Sorry to give you a call, but see your M C&W and - put the cabin pressure in the O₂ FLOW. We suggest you close your waste stowage vent valve.

02 04 18 CC-H Apollo, Houston. Once more, we see the pressure was coming down pretty low, and the O₂ flow up. We recommend checking the WASTE STOWAGE VENT valve, CLOSED. Also make sure that all the relief valves in the DM are buttoned up real good. We also see that we have le - left the secondary loop pump on. We recommend turning that off, if we can and - because it's just going to heat up the cabin. And also if you can get the potable inlet valve closed; to save us a little water, we'd appreciate it tonight.

02 30 34 DMP ..., Dick. We're ready to talk to you now.

02 31 05 CC-H Apollo, Houston. You're calling?

02 31 33 CC-H Apollo, Houston. How do you read?

02 48 56 ACDR (... Goodby. ...)

02 49 07 USSR (... Goodby. ...) -

ACDR (Best wishes. It's time to return.)

ACDR (...)

ACDR (I'm sure that we opened - -)

02 49 56 ACDR We hope - we hope it'll be there in the history of man.

END OF TAPE

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Day 200

TAG Tape 200-03/T-48

Time: 200:07:50 to 200:09:15

Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

08 10 00 (Music: "Tenderness")

08 13 14 USSR ...

USSR ***

USSR ***

08 14 02 (Music: "Tenderness")

CC-M (This is Moscow. How do you read me?)

SCDR (Moscow, this is Soyuz. I read you well.)

CC-M (I read you well, also. Are you ready to do TV - 12?)

SCDR (With commentary?)

CC-M (That's correct. Did you do all the preparations for this broadcast?)

SCDR (Yes, we have, all of them.)

CC-M (Okay. At this time, I want to give the floor to your backup crew.)

MCC-M (This is for ... I heard you. Soyuz, how do you read me? ...)

08 14 47 SCDR (Apollo, thank you. I read you very well. ... here to the Mission Control Center. We slept very well, and I know that you slept very well.)

MCC-M We hear your voice very well. We were at the Cosmodrome, and now we have the opportunity to come here to the Center. How's everything going?)

08 15 01 SCDR (Everything is going beautifully. As they say in English, everything is going on schedule. Everything is going smoothly.)

SCDR (I think that it will continue the same way, also.)

MCC-M (I have the privilege of conveying regards from your wives. They are worried, excited, watching your flights very intently. They are waiting for you to land.)

SCDR (Convey to them that they don't have to worry. Everything is going well. All the systems are functioning perfectly. We feel beautifully. If we didn't have any limitation, we would stay up here even longer. We feel very well, especially today. On previous evenings - nights we had to sleep. How about the people in Apollo? Are they awake yet?)

MCC-M (They are. They should be getting up, also.)

SCDR (How about the people on the ground? Are they up, ready?)

MCC-M (Yes, they're up.)

08 16 19 SCDR (Okay. Convey the same regards to them.)

MCC-M (How was yesterday?)

SCDR (Yesterday was a very busy day for us. We had to work hard. We had all the transfers and, obviously, we're a little tired.)

MCC-M (Here on the ground, we followed everything and we - we're in the conclusion that everything went beautifully and that everything will continue just as smoothly.)

08 16 33 CC-H Apollo, Houston. Good morning. We're talking at you through the end of an ATS pass. We'll see you at Hawaii in about 13 minutes. That's at 92:10.

SCDR (We're ready for the undocking and the docking and for the solar eclipse, the UVA.)

CC-M (Sure. You'll have a very long day even today. You'll have to work hard. Now, I want to give Nikolay the microphone. He wants to say a few words to you, also.)

SCDR (How is the picture? Is it normal? Is it good?)

Day 200

08 17 13 SCDR (Moscow, this is Soyuz. How is the picture? Is it good?)

MCC-M (Soyuz, I'm Rukavishnikov. Yes, you have a very beautiful picture. I see even the cap on your CCU. That - that one.)

SCDR (Oh, oh - that cap that is flying around. Okay.)

08 17 59 MCC-M (Well, I won't take too much time. I want to say - convey my regards to you, wish you the best.)

08 29 29 CC-H Apollo, Houston; AOS Hawaii. We have you for about 6 minutes.

CC-H Apollo, Houston. Good morning. How do you read?

CMP Morning, Crip. How are you today?

CC-H Doing great down here. How about you guys?

CMP Everybody got a good sleep here.

CC-H That's good to hear. We've been down here wide awake. At least that's what I'm telling myself.

CMP Yeah. It's kind of early down there, isn't it?

CC-H Oh, yeah, a little bit. One item I need to get up to you at this Hawaii pass. We've got scheduled, under Deke, a - helium injection at about 92:40 hours, and we need to delete that due to getting started a little bit late - getting the furnace sample started a little bit late - and we're going to pick it out a little bit later about - and we'll give you a real-time call when we want it - want the helium injection done.

CMP Okay. I'll pass that on to Deke.

CC-H Would appreciate it.

08 31 11 CC-H Also, Vance, want to let you know that we did get your UVA EMP loaded in and might remind you to look in your G&C Checklist - on page 1-36 and review the notes - the restrictions on that particular page regarding EMP.

CMP Okay. Got that. I'll give it a look.

08 31 38 CC-H Okay, fine. Incidentally, we got a little bit concerned last night. We saw the C&W and noticed that the - the O₂ FLOW HIGH and the pressure being down a little bit, and we tried to get to you about it and couldn't get up for some reason, or didn't get any response, but we - looks like it was taken care of. Could you update us on that a little bit?

CMP Stand by. Just a second; we're switching around headsets.

CC-H Okay, fine.

08 34 58 CC-H Apollo, Houston. We are 1 minute from LOS. Our next station contact will be when we see you at the ATS. That's at 92:40.

ACDR Okay, Crip.

CC-H And we'll try to pick up the morning report from you when we get down there.

08 35 28 ACDR Okay, and we'll try to have it ready.

09 01 11 CC-H Apollo, Houston, AOS through the ATS for about 4 - 50 minutes.

ACDR Roger, Bob. Good morning.

CC-H Good morning.

ACDR Well, we're just completing the fuel-cell purge.

CC-H Very good.

CC-H Tom, I had asked Vance and didn't know if you got it, where we - last night we saw you guys got a C&W, apparently a HIGH O₂ FLOW, and we saw the cabin pressure down a little bit and then come back up, and we tried to give you a call on it because we were somewhat concerned, but we couldn't get to you. Can you enlighten us about that, please?

09 01 59 ACDR I think everybody slept like a lock - rock after that long day yesterday. I didn't - I didn't even hear it.

 ACDR No, nobody heard it.

09 02 22 ACDR Right now the cabin pressure looks like about 4.9 - solid.

 CC-H Yeah, it's in - it's in good shape right now. I guess that we, from our data here, it looked like somebody had put in some O₂ from the - from the DM but - you say no action was taken there?

 ACDR Roger. We did a real healthy purge last night in the DM - before we went to sleep.

 CC-H Okay, did you all perchance - were you doing anything associated with that after - after Dick quit talking to you last night?

09 03 02 ACDR Oh - yeah, yeah, we did quite a bit, after Dick quit talking, to really get the purge up.

 CC-H Okay, maybe what we're talking about was associated with you guys still doing some of that purge action then.

 DMP Hey, Dick. Or is this Crip?

 CC-H Yeah, this is Crip here.

 DMP Oh, yeah, Crip. Hey, I went back there and purged again; in fact, I purged up until I went to sleep to make sure we had enough there, and I was reading about - as close as I could get - 240 partial when we quit. And I checked it this morning first thing when I woke up, and I'm reading 210 in there now. So it's still well above where it ought to be triggering a caution and warning in the DM.

09 03 52 CC-H Okay, that - that must have been what we were looking at. And when we tried to give you a call about it, we couldn't get up to you for some reason, but that sounds like what you were doing.

CC-H Okay, we're standing by to - to hear the morning report. Also, I might ask how your temperature is this morning. We noticed that we left the secondary loop - pump on last night. And we would suggest that you go ahead and turn it off. However, if you're a little bit warm or the humidity is a little bit high, you might go ahead and turn on that secondary evap and bring it down. We have an adequate amount of water for it.

09 04 44 ACDR Okay, we'll turn the evap off.

CC-H I - did you say - the evap is off - I guess. We noticed that the pump is still on, which really doesn't help out your temperature situation. It just sets and flows hot glycol around. If you're - if you're hot right now, you can go ahead and activate the evaporator. If not, just go ahead and secure the pump.

ACDR Yeah, we're still warm.

CC-H Okay, fine.

09 05 52 ACDR Okay, SECONDARY LOOP, ON.

CC-H Okay, copy that.

ACDR Okay, Crip, you ready for the morning report?

CC-H Yes, sir, shoot it to us.

ACDR Okay, ate everything for breakfast and lunch. For dinner I skipped the cranberry sauce and the brownies. Addition was a lemonade and coffee with cream and sugar. Okay, I had 6 hours of full sleep, real good sleep. PRD is 11005; had two Lomotils and non-prophylactic. Over.

CC-H Copy.

ACDR For Vance. He had everything but lemonade for breakfast; lunch was all over in the Soyuz. Okay, for dinner - no pea soup, no mashed potatoes, and no peach ambrosia or coffee but added pecan cookies. Okay, PRD reading is 48135. Had 6 good hours - 6 good hours of sleep, and he got an estimated 60 seconds of water. For Deke, everything for breakfast,

macaroni and ch - no macaroni and cheese for lunch, no rye bread, and - no macaroni and cheese because, you know, afraid to reconstitute from the previous experience. And cherry nut cake was too crumbly to eat for dinner. Everything else he had. PRD reading is 61005; 6 hours of good sleep; estimated 45 gulps.

09 09 33 CC-H Okay, we copied all your report there, Tom. Appreciate it. The - I guess I had a couple of items - I guess we needed to get clarified. We, normally, when you change the LiOH cans up there, can see a drop in our PPCO₂, and yesterday evening we had one scheduled for about 83:30. We didn't see that corresponding drop. Could you let us know whether that LiOH change was made?

ACDR That LiOH wasn't made.

CC-H Understand it was not made. What we would recommend is that - we've got a change coming up at about 93:50 - correc - yeah, that's right, 93:50.

09 10 19 SCDR Apollo, Soyuz. How do you read me?

ACDR (I hear you well, Alexey; how do you read me?)

SCDR ...

ACDR ... Valeriy?

SFE I read well.

ACDR (Thank you. Good morning.)

CMP (Good morning, Valeriy.)

ACDR Pardon me, Houston. Go ahead. We were just talking to Soyuz there.

CC-H Rog. I heard Valeriy coming through. What we were going to recommend is, on that LiOH can change we've got scheduled at 93:50, just go ahead and change both of them, and the one - you can go back and read at 83:30 - that was supposed to put number 9 into Alfa and take 7 and put it in D-4. And you can just add that on to the - so you can change both of them out at 93:50.

09 11 05 ACDR Roger. Double change at 93:50.

CC-H Tom, the only other item I was curious about - unfortunately, we tried to end up giving you a call in the middle of the night because I thought you were trying to call me and, as it turned out, I think we had - we were copying a - a tower frequency up from Atlanta through the command module and back down here. Has that kind of stuff been bugging you guys in the evenings?

ACDR Yeah, it has been, usually, but last night everybody slept so sound we didn't hear anything. But we've got LA tower, Atlanta tower, Heathrow, Dusseldorf, and a bunch of others.

09 12 02 CMP Yeah, and Crip, I looked at the squawk box this morning, and it was turned off. So, that's probably what did it. But I think we had somebody on the headset, but he probably slept through. So I guess that's probably one reason why we slept so well, though, because every night we have been getting every tower in Europe and parts of the U.S.

CC-H Okay, I - I think that probably also answers why I couldn't get to you when I was concerned about the - that dump thing. We didn't realize that Deke was purging out there. I guess - after this evening, we should be rid of that VHF problem though, since we won't be working in the relay mode any.

CMP Right.

09 14 28 ACDR Say, Crip; Tom.

CC-H Go ahead.

ACDR To save us - to save us the trouble of looking it up, we want to shoot some pictures of the Soyuz out with the Nikon. Could you give us a typical exposure, air-to-air, using the lens we got near the ... exposure ASA of 500, to save us from looking it up?

Day 200

TAG Tape 200-03/T-48
Page 9

CC-H We'll get it for you.

09 14 49 ACDR Thank you.

END OF TAPE

Day 200

TAG Tape 200-04/T-49
Time: 200:09:15 to 200:10:
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

09 15 13 CC-H Tom, can you tell us what lens you do have on now?

ACDR Oh, yeah. It'll be the - wide-angle lens on that - on the Nikon.

CC-H Copy.

ACDR The only time we ever had the 300 on was when we were just coming - checking the docking mechanism.

09 25 50 CC-H Apollo, Houston. Tom, I can give you some info regarding those lens settings for the photos, if you would like.

ACDR Okay.

CC-H Okay. We're assuming that you've got CI film in there since you've mentioned the ASA 500. We're recommending - -

ACDR ...

CC-H Okay. It's about f-stop of 4 and speed about 1/500. You might verify that with the built-in light meter on the Nikon itself.

ACDR All right. We'll do that.

CC-H Okay, Tom, and - -

ACDR Thank you, Crip.

CC-H Yeah. On your - on your report you gave us this morning, on the - the Lomotil we're assuming that you took that yesterday evening. Would you like any - any help from us for recommending or - your menu changes for the next couple of days to help you out a little bit?

ACDR No, I'll just stay off the coffee. I think we're in good shape.

CC-H Okay.

PRECEDING PAGE BLANK NOT FILMED

09 30 06 CC-H Apollo, Houston. We're still with you for about 26 minutes and while you guys are having breakfast, I can give you a little news, or we can just save it like Dick did this evening - or yesterday evening, rather - and read it to you then.

CMP We'd love to hear you, Crip. ... give us some news.

CC-H Okay. We got a little disturbance on the line here. I'll hold up a minute.

09 31 37 CC-H Apollo, Houston. Could you have CM-1, MASTER, and CM-2, SLAVE, please?

09 32 21 CC-H We're getting a pretty good TV picture now. It's been dropping in and out, and my downlink voice has been a little fouled up. A little bit dark right now, though.

CMP Rog, Crip. We might have the food tray in the way. We'll try to move it a little bit.

CC-H I seem to be seeing you pretty good there. See you working with your juice or whatever it is.

CMP Turns out the MDCs make a pretty good table as well as an instrument panel. Don't know what Rockwell would think of that, but that's how they get used a lot.

09 33 14 CC-H Roger.

09 34 07 CC-H Deke, is there any chance of you shading that window up there by - by your shoulder? It kind of fouls up the picture for us a little bit.

DMP Could you stand by a second, Crip? I guess I could put the window cover on.

CC-H We'd appreciate it if it doesn't interrupt your breakfast there too much. While you guys are doing that I can try to come at you with a little bit of news. I think, as Dick told you yesterday, you guys have been - been the big stars. Everything that's been going on up there and - been making quite a bit of news items. One thing that's kind of

interesting, we got a news item here from Moscow that - and excuse my trying to pronunc - pronounce the Russian names, but it's a gentleman by the name of Spadimaken Da - Davidili, I guess, has named his twin sons Apollo and Soyuz according to the Tass news agency. The twins were born in Soviet Kirghizia in central Asia where Davidili works in a plant processing semiprecious stones, Tass reported Friday.

Even in London you're making news. The head barman in a London hotel announced the creation Friday of a new cocktail in honor of the Apollo-Soyuz space flight. Barman Joe Gilmore said the new drink, called "Linkup," is made of equal parts of Southern Comfort and Russian vodka with a teaspoon of fresh lime shaken up well with ice. The hotel has said samples of the cocktail, along with letters of congratulations, were being flown to Kaliningrad from - and Houston in ice coolers to await the spacemen's return to Earth.

09 35 44 DMP That sounds great. Can you send one up?

ACDR And congratulations to the gentleman in the Soviet Union on his kiddies.

CC-H Roger.

CC-H President Ford has taken the unusual step of giving Soviet leader Brezhnev a peek at letters he wrote privately to - to Congressmen before the Congressmen had a chance to read them. In the letters, Ford announced his intention to seek remedial legislation from Congress to improve trade terms for the Soviet Union. Senate Republican leader Hugh Scott - -

SCDR (Standing by, Moscow.)

CC-H - - handed the two letters to - -

SCDR (Moscow, this is Soyuz. How do you read me?)

CC-H - - to Brezhnev when he and a 14-member senatorial delegation met with the Soviet chief in the Kremlin July the 2nd during the recent Congressional recess. I see that we're coming up on a pass over the Soviet Union, and they're probably going to be talking - -

09 36 39 SCDR (Moscow, this is Soyuz. I read you well.)
CC-H - - a little bit, I'll pause just a moment.
CC-M (Soyuz, this is - good day, I hear you well, this is Moscow. Ready to receive all your data?)
SCDR (Okay. The windows are closed.)
CC-M (Okay. How about the T-1. Is it on?)
SCDR (Okay. If we turn on this light, there'll be too much light. Too much glare. You see how much light there is?)
CC-M (The picture wasn't bad at all.)
USSR (That's right. Maybe we can get a better one.)
CC-M (Moscow. The picture is good.)
SCDR (Okay. We're ready to receive radiograms. Zero 20.)
CC-M (How about a little bit later?).
USSR (Okay. We'll wait.)
SCDR (We're feeling good. My beat is 40, Valeriy's is 51.)
09 39 03 CC-H Gents, we still - we got a good picture right now, but as soon as Vance is going to move his elbow, we get that light flaring, the one right over your shoulder, Deke. I wonder if those are filtered. It doesn't look like they are.
ACDR/CMP Yeah, they are.
CC-M (Soyuz, this is Moscow. We're ready to receive report about pressurization.)
SCDR (Okay. I will give it to you now.)
CC-H Okay, if that light's got the filter on it, we need the - the Polaroid - there we go - to adjust it down. Thank you, Vance. Just about right there. You got the focus on - on that last one.

09 39 40 CMP Yeah, and we'll have to read just that ..., give me
 the - -

 CC-H Yeah. You just had the filter, if you can - about
 10, I believe, is the number.

 CMP Wait a minute. The lens came off.

 CC-H The lens came off! Well, that - that would do it
 to you.

 SFE (Moscow, this is Soyuz 2. I'm ready to give you pad
 20.)

 CC-M (Okay. We're ready.)

 SFE (Number 1. 01, 00, 02, 00, 03, 00, 04, 11, 25, 00,
 06, 00, 07, 00, 08, 00, 09, 11, 10, 11, 00.)

 CC-M (We read you well. Confirmed. Thank you, Soyuz 2.)

 CC-M (Soyuz 2, this is Moscow. Okay. Give me - I'll
 give you parameters for 12 and 13.)

 SFE (Pad 20?)

 CC-M (Yes, for pad 20.)

09 41 39 CC-H Can we help you with any numbers there, Vance?

 CMP Does it still look - yeah, I guess it does look a
 little out of focus, doesn't it?

 CC-H Yeah, it - -

 CMP Okay.

 CC-H - - the focus isn't really all that bad right now - -

 SCDR (Zero number 12, 00.)

 CC-H - - but when you put it back on, apparently, though,
 the filter is not - not correct. So, if you just
 hold the lens and twist the filter a little bit, I
 think we'll be in good shape.

 SCDR (Okay. 13 and 14, 00.)

 CC-M (Received you. Thank you, Soyuz.)

CC-H Almost - right - right there, that's good.

CMP Okay. How's the focus? Okay?

09 42 23 CC-H I'm no expert but it looks good to me.

CC-H I think I've got a majority vote here that it looks good.

CMP Okay.

CC-M (We opened valve ...)

SFE (The pressure's 20.)

CC-M (Received it, Soyuz 2.)

CC-H I didn't think you guys got to hear my good wake-up music this morning with the speaker box turned off.

09 43 11 CMP Yeah, we - we were kind of wondering what it would be like. Hate to have missed it.

CC-H Oh, well. We'll come back at you.

CMP I think we'll have to give you some wake-up music in return sometime, too.

09 43 27 CC-H Well, we'd appreciate that.

USSR (550 pressure.)

USSR (We've got an awful lot of stuff around and after we do the pressurization, we will systematically put everything away.)

USSR (It's already put together and packed. We just have to carry it over to the descent vehicle.)

CC-M (Roger, Soyuz.)

SFE (Pressure is 610.)

MCC-M (Roger, Soyuz 2. 610.)

09 46 43 CC-H We turned the camera up for a minute and looked out the window. It looked kind of pretty, but we're back with you again.

CMP Very good.

USSR (***) 80.)

USSR (690.)

CMP Crip. Just one thing to mention. We've got a little bit of moisture on the inside of the outer pane - it looks like - of window 5, and I think if we get in a sunny attitude it might evaporate, but right now it's - well, I don't know if it could bother the SAM or the photos or not. We'll see.

CC-H Does it appear to be outside? Is that what you said, Vance?

09 47 49 USSR (***) 10 ...)

CMP Looks like - you know, you have a couple of panels and it looks like it might be on the inside of the outer panel.

USSR (As to above data and system check, everything is nominal.)

CC-H Copy.

CC-M (Everything?)

USSR (***) the check. We have it from pad 3.)

09 48 18 CC-H Okay. We're about ready to - to lose you here through the ATS, and our next station - -

USSR (***) 10 millimeters within 13 seconds.)

CC-H - - contact will be through the Vanguard, and that's about 24 minutes away.

CMP See you then.

09 48 31 CC-H Okeydoke. Vanguard at 93:52.

09 48 37 CMP Rog. Have a good breakfast, if you haven't already.

USSR (... spacecraft ...)

CC-H Well, I was thinking more like dinner.

CMP Yeah, we're doing fine.

USSR (We feel cool air.)

USSR (How do you ***)

09 50 05 CC-H ...

USSR (Roger. Copied 780.)

10 12 24 CC-H Apollo, Houston. We're AOS at Vanguard. We have you for about 6 minutes.

ACDR Roger, Dick. Or is it Crip?

CC-H Still Crip here. I'm probably going to be giving it to Bo shortly. Only one item I'd like to pass to you up on this pass, I believe, is that I think they had - told you that one of your TV cameras was causing us a little bit of problem with color glitches yesterday, and they had you switch it around. That was the one that we've currently got on station 11 - panel 11. And what we'd like you to do if you can, to allow us to ensure that we're going to have good TV for the rest of the day, is to switch the cameras that you have on 11 and 871. And what we want you to do is to disconnect the cables at the camera. In other words, do not exchange the camera cables.

ACDR Okay, Crip. I'll do that. And also we got the LiOH changed out.

10 13 20 CC-H Okay, good deal. Thanks a lot, Tom.

CC-H The O₂ flow is - pretty high. We'd like to verify that the WASTE STOWAGE VENT valve is CLOSED, please.

CMP I think it's still open, Crip. Venting from - the urine or either ...

CC-H Okay, that's fine.

10 17 32 CC-H Apollo, Houston. We are about 45 seconds from LOS. Our next station contact will be through ATS and that's at about 94:13. Tom, one item on that camera exchange you're making for me. We want the one that

you end up installing on panel 11 to be put in MASTER and the one that you take over to 871 to be in SLAVE. That's just changing the position on each of those cameras.

10 18 00 ACDR Roger. Panel 11, MASTER.
CC-H Thank you.
CC-H I'll be saying good evening to you and talk to you in the morning.
ACDR Okay. Thank you, Crip, ...
10 18 21 CC-H The next morning, that is.
ACDR Roger.
10 34 17 CC-H (Good morning, crew.)
ACDR (Good morning, Bo; how are you?)
CC-H (Okay. We're on ATS here.)
ACDR (We ***)
10 40 27 ACDR Houston, Apollo.
CC-H Apollo, Houston. Go ahead.
ACDR Yeah, Bo. Say, all three of us just want to thank you so much for doing a great job on CAP COMM yesterday. That was a long, rugged day, and everything you did keeping the things coordinated was outstanding. Just wanted you to know how much we appreciate it.
CC-H Okay. It was my pleasure. It was certainly an interesting day.
10 40 50 ACDR (Yes.)

END OF TAPE

Day 200

TAG Tape 200-05/T-50
Time: 200:10:45 to 200:12:00
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

10 46 57 CC-H Apollo, Houston. We'd like ACCEPT so we can give you a new REFSMMAT.

10 47 05 ACDR Okay, Bo. Got it.

CC-H Thank you, and I have the undocking pad, which is on page 7-1 of volume II of the Flight Plan. When somebody has a chance, give me a call and I'll pass that to you.

ACDR Okay. Going to it now, Bo.

DMP ..., we've already maneuvered into the block one, incidentally - baseline, rather.

CC-H Roger. We understand that. We're sorry it's late, but it needs to be tweaked.

DMP Okay.

ACDR Okay, Bo. Go ahead.

CC-H Roger. Page 7-1, the final: 095:43:12.00; 173.29, 272.03, 350.89. We've already locked up on ATS, so those high-gain angles are not applicable and, of course, you only have to put these fine numbers in on the trim, just before undocking.

10 48 35 ACDR Okay, on the readback on the final undocking pad - 095:43:12.00; 173.29, 270.03, 350.89.

CC-H The seconds were 20.00.

ACDR Roger. So the time's 095:43:20.00. Right?

CC-H That's a good readback.

ACDR Thank you.

CC-H And, Tom, while you have that checklist out, there is one more change, I'm sorry. And that's at 95:26, where it says "Primary evaporator checklist," also add in "Deactivate secondary evap, S/l-18." Did you get all that?

ACDR Yeah, deactivate the second one.

CC-H Deactivate the secondary evaporator. Roger.

ACDR Roger.

CC-H And we're finished with the uplink; we can go BLOCK.

10 49 48 ACDR Okay.

10 50 09 CC-H Apollo, Houston. Someone here heard a discrepancy in the pitch number. Could you confirm that that is 272.03?

ACDR 270.03.

CC-H Negative. It should be 272.03.

ACDR Okay.

10 50 32 CC-H Thank you.

11 02 33 CC-H Apollo, Houston. We'd like you to leave the shades in that you don't need out for the UVA, so that it won't - so that we get better TV.

DMP Unfortunately, Bo, we need about all we can get... for visibility.

CC-H You were kind of garbled, Deke. Did I understand that you said you wanted those windows open for visibility?

DMP Yes. We want everything we got.

CC-H Roger.

CC-H And, Apollo, as you probably guessed, we are getting - TV of the inside of the command module now, and there seems to be something over the TV.

CC-H Thank you.

11 04 11 CMP Houston, look. We - we've got some fantastic viewing and picture taking of Africa right now.

11 08 54 CC-H Roger.

CC-H Command module, Houston. That out-the-window camera is really giving us a good view this afternoon.

DMP Okay, thank you.

DMP If it's half as good as ours, you ought to be having a ball.

CC-H We have one request. That camera that - item that was in front of the camera that Vance had taken down really was helping before. It was blocking some of the light that was coming out of the center hatch window.

11 09 26 CC-H That's perfect. right now.

CMP Okay, does that help?

CC-H That's - that's just right.

DMP Okay. I've blocked the number 1 window here with a map. Is that helping you some?

CC-H Roger.

11 09 43 DMP I'm going to have to take it down periodically to get a view here.

11 13 12 ACDR Hello, Houston; Apollo.

CC-H Apollo, Houston. Go ahead.

ACDR Roger. For a change, we thought we'd give you some wake-up music.

(Music: "Proud Mary")

11 15 07 SCDR (Apollo, this is Soyuz. How do you read me?)

SCDR (Apollo, this is Soyuz. How do you read?)

ACDR (Excellent. How me?)

SCDR (I hear you poorly, with a great deal of interference.)

ACDR (Repeat please, Soyuz. ...)

SCDR (How do you read me?)

ACDR Hey, Houston, we'll have this - and other good selections for you later on.

CC-H (Thank you, Apollo. We read you well.)

SCDR We are now in the orbital module, in Soyuz. We're going to go to descent vehicle.

CMP (Good.)

CMP Houston, Apollo.

CC-H Apollo, Houston. Go ahead.

CC-M (Moscow. Soyuz, how do you read me?)

SCDR (I read you excellently. We are now in the orbital module, in our spacesuits. We are transferring into the DV.)

SCDR (Onboard everything is normal. The pressure is excellent and everything is on schedule.)

11 16 36 CMP Houston, Apollo. Occasionally, we get some very good viewing because of attitude, weather, et cetera. We just now got a couple of visual observations, things that we haven't been able to get as well before. For example, saw the Levantine Rift and Egypt - I think might have seen the pyramids; that's - the ... that we have. And now I've got to see a picture or a layout of - of how the pyramids are laid out when we get back, but I saw two specks that might have been pyramids.

CC-H Say again what the specks might have been.

CMP We think they're the pyramids of Egypt, and that happens to be a visual observation. ...

SCDR (We will close the open ... valve on Soyuz.)

CC-H Understand.

CMP ...

CC-H Experiments asked us to relay that they appreciate the good work.

CMP Right.

SCDR (Repeat it again.)

DMP This is probably a good time to comment, we haven't done much good work in that area so far due to a combination of cloud cover and time constraint.

11 18 18 CC-H More days are coming, and we're looking at that picture out the window and it looks pretty fantastic now with Soyuz just over the horizon.

CMP Right.

MCC-M (...)

SFE (Roger.)

MCC-M (... some kind of loud noise, it's coming periodically, ... we don't understand because of the loud noise.)

SFE (... Manual control.)

DMP Soyuz, Apollo.

CC-H Apollo, Houston. Go ahead.

CMP No, we're calling Soyuz, Bo.

CC-H I'm sorry.

DMP Okay. Soyuz, Apollo. Soyuz, Apollo.

SFE (Moscow, this is Soyuz. We are transferring to the DV.)

ACDR (...)

SFE Apollo, Soyuz. Apollo, this is Soyuz. How do you read me?

DMP (Valeriy, I read you, okay.)

SFE Quite well.

DMP (Good. The undocking time now is 95 hours 33 minutes 20 seconds GET.)

SFE (... we will fly.)

DMP (...)

11 21 24 CC-H Apollo, Houston. There's about a minute and a half of ATS until ATS LOS. We'll see you at Vanguard at 95:24.

DMP Roger, Bo. 95:24.

SFE (Moscow, this is Soyuz 2. Can you ... there already.)

11 44 03 CC-H Apollo, Houston through Vanguard for 7 minutes.

CMP I read 5 by, Bo.

ACDR And, Bo, we have synced our clocks with the Soyuz. And you ready to copy the P52, Bo?

CC-H Ready for the P52, and understand you're synced.

ACDR Roger. Star 32, star 40, NOUN 05, all balls; plus 81, minus 10.1, minus 49; torqued, 95:14:16. Over.

CC-H Understand 32, 40, all balls; plus 81, minus 10.1, minus 49; 95:14:16.

ACDR Roger.

CC-H Apollo, Houston. Just a reminder to change your NOUN 22's and tweak up the attitude.

ACDR Roger.

11 47 28 CC-H Apollo, Houston. One more small item. When you deactivate the primary and secondary evaporators, we'd also like you to make sure the waste stowage vent valve is closed.

ACDR Okay.

11 48 06 CC-H And, Apollo, Houston. Just one more item. We need the PUMP, OFF, in the secondary evaporator loop.

11 48 12 ACDR Roger. PUMP, OFF, in the secondary evaporator loop. We'll deactivate the secondary as well as the primary at the same time.

11 48 20 CC-H Roger. Deactivate both the primary and the secondary.

Day 200

11 50 17 CC-H Apollo, Houston. There is about 1 minute until LOS.
We'll see you at ATS at 95:46.

ACDR Roger.

11 50 56 CC-H Apollo, Houston. We're going to need those evapora-
tors off as quickly as you can get to them.

ACDR Okay.

11 51 02 CC-H And the pump.

11 51 06 ACDR Okay. The pump's off, everything's - the evaporators
are now, Bo.

11 51 09 CC-H Roger. Thank you. And the pump's off, too.

11 51 12 ACDR We had EVAP, OFF

END OF TAPE

Day 200

TAG Tape 200-06/T-51

Time: 200:12:00 to 200:13:30

Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

12 06 45 ACDR Okay, the next one is ... Center him in the COAS.
 DMP And I don't control - -
 ACDR And at 4 minutes, thrust X - plus-X, four jets for
 16 seconds, for 4 minutes.
 DMP Am I supposed to control roll or not? Does it say?
 ACDR No.
 DMP I don't?
 CMP You eventually have to - -
 ACDR You - eventually you have to, you ... - -
 CMP - - ... because you've got to go up and dock with it.
 DMP Yeah.
 ACDR It's easier if you do.
 DMP But I wasn't sure about this point - ... wanted me
 to - -
 CMP Let's see, I guess our shadow's off of us now. ...
 - -
 ACDR Yeah. Okay - -
 CMP - - about where it came off.
 ACDR Okay, Deke. Stand by. Plus-X for 16 seconds.
12 07 22 ACDR MARK it.
 DMP Okay, ...
 ACDR Okay, 8 seconds gone; 10 seconds; 13, 14, 15 -
12 07 37 ACDR 16. That's it. Stop.
 ACDR (Soyuz, this is Apollo.)
 SCDR Apollo; stationkeeping.

DMP No, no. No, we're not either, Tom.

USA ...

ACDR (50 meters.)

USA Okay.

CC-H Apollo, Houston through ATS. And we're hearing your calls.

12 08 14 DMP Roger. We've undocked and stationkeeping.

ACDR Everything was on time, Bo.

CC-H Roger. Thank you. And if someone can get that out-the-window camera and check that it's in AVERAGE, it may help our picture.

12 08 35 ACDR It's in AVERAGE, Bo.

CC-H Thank you.

SCDR Soyuz orientation lights on.

ACDR (Roger.)

CC-H Apollo, Houston. May we ask you put that out-the-window camera to PEAK.

CMP Roger.

12 09 03 ACDR You got PEAK, Bo.

CC-H Thank you.

CC-H Apollo, Houston. On panel 230, we'd like the UP TELEMETRY switch to UP TELEMETRY.

ACDR Roger.

12 09 41 ACDR Bo, it's in UP TELEMETRY.

CC-H Roger. Understand. The panel 230 UP TELEMETRY switch was in UP TELEMETRY.

ACDR That's right, sir. How's your picture on the tube, Bo?

CC-H Pretty good. We see Soyuz there and understand the picture's even going to get better as we get into the daylight.

ACDR Oh, yeah.

USA ...

ACDR (About 50 meters now.)

USSR (About 30 meters?)

ACDR (50. 50.)

CC-H Apollo, Houston. On panel 181, we need the TV STATION SELECT CM and CML to UP TELEMETRY.

ACDR Say again, Bo?

CC-H On panel 181, those two TV STATION SELECT switches in the upper left-hand corner - to the center UP TELEMETRY position.

USSR (...)

ACDR (...)

SCDR What is the rate now?

ACDR (There is stationkeeping.)

SCDR What distance stationkeeping?

SCDR 50 meters.

ACDR (Roger.)

CC-H And, Apollo, Houston. We need that out-the-window camera back to AVERAGE because we've gone away from the Earth.

SCDR I'm ready.

12 12 33 ACDR Roger. You got AVERAGE.

SFE Soyuz ready for orientation.

ACDR (Okay. Ready.)

12 13 41 SFE Initiating orientation.
ACDR (All right.)

12 15 19 CC-H Apollo, Houston. The TV picture is so good we can see the capture latches.
ACDR Roger, Bo. Roger.
CC-H Apollo, Houston. Could you give us an estimate of your range?
ACDR Okay. Deke has the same problem I have. The COAS is completely washed out. It's full up, it's so bright out here.
CC-H Understand.
ACDR We can look and ballpark it; it's about 50 meters, plus or minus 1 or 2.

12 16 00 CC-H Roger.

12 18 14 SFE Orientation established.
ACDR (All right.)

12 20 20 SCDR I see guide ring extending.
ACDR (Roger. Understand you.)
CC-H Apollo, Houston. We would like you to go PEAK on the out-the-window camera.
ACDR Roger.

12 20 47 ACDR You've got PEAK, Bo.
CC-H Thank you. The reason I called that is whether - depends on whether or not we can see the Earth.
ACDR Yeah, Bo; understand.
CC-H Apollo, Houston. We'd also like you to go to GAMMA 1/2 on the out-the-window camera.
ACDR Stand by. We're real busy.

Day 200

TAG Tape 200-06/T-51
Page 5

CC-H Okay.

12 22 35 ACDR You've got 1/2 GAMMA, Bo.

CC-H Thank you.

CMP And, Bo, we think maybe his docking attitude isn't exactly what we've got on the pad.

ACDR We know it's not, Bo.

CC-H Roger. We'll check that.

ACDR Roll looks good. Pitch and yaw are a little off.

CC-H Understand.

CC-H Could you give us your attitude? We don't have any data here, because we're watching TV.

12 23 04 SCDR APDS mode accomplished.

ACDR (Say again, please.)

SCDR APDS mode accomplished.

ACDR (Roger. Roger. Understand you.)

DMP I'll give you our docking attitude as soon as we have it refined here.

CC-H Roger.

SCDR Everything is ready.

12 24 09 DMP Okay, Bo. We're pretty close. The docking attitude at 195.7, 208.1, and 21 degrees point 3.

CC-H Roger.

12 24 54 ACDR (Soyuz, this is Apollo. Orientation established. Ready for docking.)

SCDR We are ready. Go ahead, Tom.

ACDR Rog, Alexey. Understand.

Day 200

CC-H Apollo, Houston. On the out-the-window camera, we would like you to go AVERAGE again, please.

12 27 21 ACDR (Soyuz. Am now approaching Soyuz. We are ready.)

SCDR Can't understand you, repeat it, Tom.

ACDR (Am approaching Soyuz.)

SCDR Okay, keep coming, Tom.

12 27 54 CC-H Apollo, Houston. On the out-the-window camera, we'd like you to go to LINEAR again, please.

ACDR ...

CC-H That did it. That's a good picture.

ACDR Okay, Houston. Deke's having the same problem with COAS washout that I had.

DMP ... it's so bright.

CC-H Roger. Understand.

12 28 57 DMP You can see absolutely zero COAS.

ACDR (Distance 30 meters.)

USSR ...

ACDR (Very slow, very slow.)

DMP Bo, hold on a second.

SCDR ... meters.

CC-H Apollo, Houston. We're getting a good picture but the camera is moved a little. Can we ask you to move it to the right and up - up a little bit. Thank you.

12 33 41 CMP (Contact.)

12 34 39 SCDR Apollo, this is Soyuz. Initiation - initiating retraction.

CMP (Okay.)

CC-H Apollo, Houston. It was a beautiful docking. We had a good picture. We can see Italy coming up in the Mediterranean right now.

CMP (Okay.)

12 37 41 SCDR (We have capture. Now in the process of closing the latches. We did the solar eclipse experiment. Everything following the program.)

CC-H Apollo, Houston. It looks like we lost communications with you for a while, but we're back again.

12 38 34 DMP Okay. We were getting into gimbal out there, Bo, for some reason. So we got to manually crank out of there; that's - probably we're in some weird attitude right now.

CC-H Understand.

12 40 38 SFE (This is Soyuz 2. Interface seal compressed. Over. Soyuz.)

ACDR ...

12 40 52 SFE Interface seal compressed.

ACDR (Okay; Roger. Understand you.)

12 40 57 SCDR APD mode - APDS mode accomplished.

ACDR (All right.)

CC-H Apollo, Houston. Over.

ACDR Go ahead, Bo.

CC-H We see you have the SECONDARY of - LOOP and PUMP ON. And we think that - you probably don't need it on. Could you comment on that?

ACDR Yeah, we're burning up in here, Bo.

CC-H Understand.

ACDR It's a little hot with all the cameras on.

ACDR Houston, Apollo.

CC-H Go ahead.

DMP Yeah, we're in some random attitude here, due to getting into that gimbal lock situation. And we're debating whether to maneuver back to the docked attitude or leave things go. What's your recommendation?

CC-H Let me check on that for you, Deke.

DMP Okay.

CC-H Apollo, Houston. We suggest you maneuver back to the docking attitude at this time, and that's 197, 205, 014.

DMP Okay. Roger. That was our opinion, too. Just ...

USA ...

12 45 15 SFE (I hear you excellently. How do you read me? Everything is normal. We're doing the rough pressure integrity check. 1 minute, time. The contact was proper; everything is normal. This is the third day that we've been bothered by - tormented by some other station. So every time we pass over this area, 194 degrees, then we get interference from a very loud station, some sort of airport weather station, and it just completely interferes and blocks all the comm.)

CC-H Apollo, Houston. Over.

SFE (The moment we get into the docking or undocking area.)

CC-H Apollo, we remind you just to tell Soyuz you're going to maneuver, and we'd like the three camera switches on 181, OFF, and we're going to be doing a VTR dump here, so there will be no downvoice for approximately 5 minutes.

CMP Okay.

12 52 37 SCDR (Pressure 800 in the orbital module; 810 in the descent vehicle.)

CC-H Apollo, Houston. There are 2 minutes until ATS LOS. We'll see you at Guam at 96:39.

12 56 23 CMP Okay, Bo. And we've got the hatch out and the UVA cable connected to ...

CC-H Roger. I understood that you have the hatch out.

CMP That's affirmative. And the UVA prep checklist complete.

CC-H Roger. And we have an addition. At 96:40 GET, we'd like you to do a helium injection. DM Checklist, D/7-5, and you've already gotten the hatch out.

12 56 53 CMP That's affirm. And we got that helium injection 7-5.

13 02 10 SCDR Tom, just now we are in the orbital module.

ACDR (Roger. You are in the orbital module.)

CC-H Apollo, Houston through Guam for 4 minutes.

DMP Okay, Bo.

CC-H I have got the second undocking pad on page 7.7, if somebody can copy.

DMP Stand by.

ACDR Just a second.

CC-H Apollo, Houston. Over.

DMP Roger, Bo. Ready to copy the second undocking.

CC-H Roger. That's on page 7-7. Undocking time is as scheduled. 026.00; 307.00, 322.00; high gains: plus 003, plus 230. Over.

DMP Roger. I missed the first angle. The nominal time for undocking, then give me a roll angle.

CC-H The roll was 026.00.

ACDR Okay. Nominal time, which should be 099:07 and four balls; ti - roll 026.00, 307.00, 322.00; plus 003 for pitch, plus 230 for yaw. Over.

13 04 55 CC-H Roger. That was a good readback. And just some information about your fuel. In the simulator you used about 120. This undocking and redocking you used about 200. You're about 200 above the experiments redline.

ACDR Roger.

ACDR Okay, Bo. Thank you.

CC-H Roger.

CC-H Apollo, Houston. There is less than a minute until LOS; Santiago at 97:16.

ACDR Roger. And, Bo, again, you wanted the helium inject at this time, right, at 96:40?

CC-H That's affirmative.

ACDR Okay. That's page 7-3 in the DM Checklist.

CC-H That was page 7-5.

13 06 16 ACDR Roger. 7-5.

END OF TAPE

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

13 37 41 CC-H Apollo, Houston through Santiago and then ATS.
ACDR Roger, Bo. Read you loud and clear. How me?
CC-H Loud and clear.
ACDR Okay. The helium injection was done. And also, want to read the data from - copy the data from P52?

13 38 19 CC-H Roger. We're ready for the P52 data.
ACDR Star 33, star 42; NOUN 05, all zeros; plus 13, minus 18, and plus 4; platform torqued, 96:43:15.
CC-H Understand; 33, 42, all balls; plus 13, minus 18, plus 04; 96:43:15.
ACDR Roger.
CC-H And do you have the option 1 time?
ACDR Stand by.
CC-H Apollo, Houston. You can do that option 1 either in daylight or darkness, as you wish.

13 39 45 ACDR Yeah; Rog. We're going to do it -

13 42 20 CC-H Apollo, Houston now through ATS.
ACDR Roger; through ATS. Okay, we're pitching down with respect to the ground now. Stand by.
DMP Hello, Houston; Apollo.
CC-H Apollo, Houston. Go ahead.
DMP Bo, do you want us to - try this option 1 now and not worry about tweaking it up on stars after the platform goes into coarse aline, or would you prefer we wait until the next night pass?

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CC-H Roger. We understand you'd like to do the option 1 now and not worry about tweaking it up until the next night pass, and that's fine with us.

DMP Okay. It's either that or getting it the next night pass, and if you prefer, I'll do it now.

CC-H Roger. We prefer you do it now, and if somebody's down there, we'd like on panel 230 the UP TELEMETRY switch to RELAY.

DMP Stand by. Tom's getting it.

13 43 55 ACDR You got RELAY.

CC-H Thank you.

13 44 18 CC-H And, Apollo, Houston. We need the UP TELEMETRY switch now back to UP TELEMETRY.

13 45 29 CC-H Apollo, Houston. I think we've got a good ATS lockup now.

13 47 58 CC-H Apollo, Houston. How do you read?

13 48 42 CC-H Apollo, Houston. If you read, we think you can go NARROW and REACQ on the antenna now.

SCDR ...

13 49 37 CC-H Apollo, Houston. If you read, we think you can go NARROW and REACQ on the ATS antenna now.

CC-H Apollo, Houston. If you read, NARROW and REACQ on the ATS antenna.

13 50 40 ACDR Houston Apollo.

CC-H Roger. We read you, Tom.

ACDR Hello, Houston; Apollo.

CC-H We read you. How do you read us?

ACDR Houston, Apollo. How do you read?

CC-H Apollo, Houston. We read you loud and clear.

13 51 38 CC-H Apollo, Houston. Please go NARROW and REACQ on the
ATS antenna.

13 52 45 ACDR Hello, Houston; Apollo.

CC-H Apollo, Houston. We read you loud and clear.

13 53 32 CC-H Apollo, Houston. How do you read?

13 54 48 CC-H Apollo, Houston. How do you read?

13 55 17 CC-H Apollo, Houston. How do you read?

13 56 30 ACDR Hello, Houston; Apollo.

CC-H Apollo, Houston. Go ahead. We read you loud and
clear.

13 57 23 CC-H Apollo, Houston. How do you read?

ACDR Houston, Apollo. How do you read through Madrid?

CC-H Apollo, Houston. We read you. Go ahead.

ACDR Hello, Houston; Apollo. How do you read through
Madrid?

CC-H Apollo, Houston. We read you well through Madrid.
Go ahead.

CC-H Apollo, Houston through Madrid. How do you read?

ACDR Houston, Apollo. Do you read through Madrid?

CC-H Apollo, Houston through Madrid. How do you read us?

14 02 46 CC-H Apollo, Houston. How do you read?

CC-H Apollo, Houston. How do you read?

14 03 56 CC-H Apollo, Houston. How do you read?

ACDR Okay. Read you loud and clear, but the needle keeps
wavering on your station through Madrid. I wonder
what happened to the S-band? Over.

CC-H We're trying to figure that out. The angles that we
have for your ATS are minus 19 and 252.

ACDR Okay.

14 04 52 ACDR I've got a minus 19 and 252 on the REACQ. Is that
any good through ATS?

CC-H Roger. We seem to be reading you quite well now.
How are you reading us?

ACDR Loud and clear through ATS.

CC-H Roger. That's good. Do you have any messages?

ACDR No. You got an echo.

CC-H Roger. That's probably the VHF at Madrid.

CC-H And, Apollo, Houston. We would like you to go
ACCEPT.

14 05 27 ACDR Roger. ACCEPT; got it.

14 05 30 CMP And the option 1 was - was completed.

CC-H Thank you.

CC-H Apollo, Houston. Do you have a time on that option
1?

CMP ...

14 06 33 CC-H Apollo, Houston. Do you have a time on that option
1?

14 07 21 CC-H Apollo, Houston. How do you read?

CMP Loud and clear, Bo. Haven't you been reading us?

CC-H Negative. You've been cut out by a lot of inter-
ference.

CMP Okay, Tom will come up with the time in just a
minute; he's looking it up.

14 07 50 SCDR (Moscow, this is Soyuz. I read you well. Over.)

ACDR Okay, Bo. It was 97 plus 20.

SCDR (Rough integrity check results excellent. Exact integrity - pressure integrity check was performed for 10 minutes. The results are also excellent.)

CC-H Apollo, Houston. We would like to go BLOCK if you read.

ACDR Bo?

CC-H Roger. Go BLOCK on the computer. And we copied 97:20; was that for the option 1?

ACDR Roger. And we'll ... before it gets down to ...

14 09 52 DMP Houston, how do you read now?

CC-H We read you fairly well. Go ahead.

DMP Okay, just doing a comm check.

CC-H Roger. I have two notes for the UVA, when someone is ready to copy.

ACDR Go ahead.

CC-H The first is on the field of view. It is possible that the star tracker could indicate lock and be outside of the spectrometer field of view in yaw without an oscillation. And therefore you must fly the spacecraft with Soyuz reflector within plus or minus 1-1/4 degree of the center of the COAS calibration mark in yaw. Pitch is operating normally.

ACDR Roger. Possible in the field of view for it to indicate locked on but really be outside, so you must fly within plus or minus 1-1/4 degrees to center of the COAS. Over.

CC-H Roger. That's right. Within 1-1/4 degree of the center of the COAS cal mark. That's only for yaw.

DMP Okay, Bo. Yeah, Bo, we had 3 degrees to the right and 2-1/2 to the left, you may remember, on the cal ...

14 11 19 CC-H Roger. That's what brought this all about. And on the UVA RCS cutoff, if necessary, the PSM can be used

to depletion, which is 7 percent on the onboard meter. Then you are cleared to continue UVA on the quads until the lowest quad reads 80 percent.

DMP Okay. Got that.

CC-H Roger.

14 13 10 CC-H Apollo, Houston. On panel 10, we would like you to check the VHF FM thumbwheel at no higher than 3, and could you tell us where it is?

CMP Stand by.

CMP It doesn't have - VHF FM - -

DMP Thumbwheel ...

CMP - - and I'll position that to about 3 or less.

14 13 42 CC-H Roger. Understand it was at 5, and you're bringing it down to 3.

14 18 38 CC-H Apollo, Houston. On channel - on panel 230, we would like to verify that the UP TELEMETRY is in the center UP TELEMETRY position.

ACDR Okay. It's in RELAY going to UP TELEMETRY.

CC-H Thank you.

SFE Apollo, Soyuz. How do you read me?

ACDR (I hear you excellently.)

SFE The time to initiate undocking is 99:03:00 flight time.

ACDR (No, at 99:07:00. Over.)

SFE Mission Control - Moscow Mission Control said - told us that the time is 99:03:00 - the time to initiate undocking.

14 19 57 ACDR Bo, did you hear that on RELAY?

CC-H Roger. I did. Soyuz told you Moscow told them 99:03.

ACDR Roger.

SFE Do you read me?

ACDR Okay. It takes awhile for them to undock, so I - I see what they're hitting at.

SFE How do you read me?

ACDR (Roger. Understood you excellently.)

SFE Tom, are we still GO for undocking? The time of undocking, 99:03.

ACDR (Roger. Understand you. All right.)

ACDR Yes, Bo. We're squared away. We know that it takes them quite awhile to undock. There's no problem.

CC-H Roger. We believe so, too, but we're discussing it right now to make sure.

CMP ... their sequence starts - at that time, and it doesn't complete until 99:07.

CC-H Roger.

14 22 25 ACDR Bo, you got anything else for us on this - before we go over the hill on ATS and before we hit the eat period.

CC-H Negative. We were going to say that we do agree with you - that 99:03 is the time they start, and then your undocking time is the time that they sep - that you separate. We have one question and that is, how did the solar eclipse go?

DMP It went just fine as far as I could tell, Bo. We called them, said they had sunlight on their reflector. It was creeping in there fairly slow, but as soon as I saw it touch the edge, I gave them a call and - at about 2 minutes and 53 - 54 seconds.

CC-H I understand; 2 minutes 53 - 54 seconds is when you gave them a call saying they had some sunlight.

DMP That's affirm. It may have been a little earlier on it but I thought I'd better be conservative because I remember how sensitive they were to that.

CC-H Okay.

14 23 33 DMP The only other thing, Bo, just for your information, coming back in we were in good shape, and as long as they were above the horizon, we were in good shape. As soon as they got below the horizon, that COAS just washed out to nothing. And trying to judge translational requirements is a very *** so I think what I'm telling you is that the safest place we can be is going to be in close enough so we can see that cross on there - that standoff cross on there, especially if we're in an Earth background.

14 25 00 CC-H Roger. We understand what you're saying.

CC-H Apollo, Houston. We think the UVA here, you should probably be in local horizontal most of the time so you shouldn't have the problem -

DMP Yeah, that's true. We hope so.

14 25 05 ACDR Houston, Apollo.

CC-H Apollo, Houston. Go ahead.

ACDR Roger. We've got a little present here we want to - of music that - (western Oklahoman music for the Soyuz crew and for the people working in the MCC in Moscow.)

14 25 30 CC-H Understand you want to give us some music, and you want it to go to Moscow.

ACDR Okay, it's going to be playing now.

14 26 10 (Music: "(Hello, Darling)")

ACDR Over.

CC-H Apollo, Houston.

ACDR Go ahead.

CC-H That sounded like it was from far western Oklahoma, around Kiev.

ACDR No, that was Conway Twitty in Russian for the Soyuz crew and for the people in the Control Center.

ACDR I don't know whether my old friend, Jim Hartz, who's working upstairs on the third floor, recognized that or not. He's from Tulsa.

CC-H Roger.

14 31 26 CC-H Apollo, Houston. I have a block data here for rev 93. If and when somebody is ready to copy it, please give me a call.

ACDR Go ahead.

CC-H Roger. Rev 93. Time, 153:20:39; minus 193.9, plus all balls, plus 020.3; 002, 330, 355; 177.0; 00:08; 197, 1571.6, 25770, 26:03; 27:20, not applicable, 051/309, 32:44, 35:47, plus 19.77, minus 163.75. Over.

14 33 24 ACDR Roger. You want a readback on that?

CC-H If you wish.

ACDR Okay. Rev 93. Time 153:20:39; minus 193.9, plus all balls, plus 020.3; 002, 330, 355; 177.0; 00:08; 197, 1571.6, 25770, 26:03; 27:20, N/A; 051/309, 32:44, 35:47, plus 19.77, minus 163.75. Over.

CC-H Roger. That's a good readback. Remarks: orbital REFSMMAT, CM/SM sep, yaw left to 310, NOUN 48, pitch plus 0.04, yaw minus 0.67; CSM weight, 26240; DM weight, 4500.

ACDR Okay. Orbital REFSMMAT, CS/SM [sic] sep, yaw left 031 degrees, and the NOUN 48's pitch is plus 04, yaw minus 67; the weight is 26248 [sic], and 4500.

CC-H Roger. You were cut out of that yaw left - it was 310. Otherwise, it's all a good readback.

ACDR Okay.

CC-H And I have one other change for you, and that is the PSM cutoff for UVA should be 10 percent.

ACDR Roger. 10 percent.

CC-H And we're less than a minute from LOS. The next
pass is Orroral at 98:24.

14 35 30 CC-H And as we go over the hill, we see that you're in
ATT 1 RATE 2 instead of RATE 2.

14 46 59 ACDR Hello, Houston. Apollo through Orroral.

CC-H Roger. We read you through Orroral, and you are
GO for undocking.

14 47 28 CC-H Apollo, Houston. Over. How do you read?

END OF TAPE

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TAG Tape 200-08/T-53

Time: 200:15:00 to 200:16:30

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ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

15 20 27 CC-H Apollo, Houston through ATS. Over.

ACDR Roger, Bo. Read you loud and clear.

CC-H Roger. You have a GO for undock. On panel 230, we would like the UP TELEMETRY switch to RELAY.

15 20 40 ACDR Roger. RELAY and we have the UV ABSORPTION POWER, ON, at 98 plus 56 plus 00.

CC-H Roger. 56 plus 00, the ABSORPTION POWER, ON, and on panel 181, we would like the three TV camera switches to the ON position - the POWER switches.

CC-H And, Apollo, Houston. We have our commands in, so on panel 230, the UP TELEMETRY switch to UP TELEMETRY, when you have a chance.

15 21 41 ACDR You got it.

CC-H Thank you.

CC-H Apollo, Houston. We have a good TV picture.

ACDR Okay.

SCDR Apollo, Soyuz.

ACDR (Over.)

15 22 53 SCDR Still undocking.

ACDR (All right.)

15 23 04 SCDR Undocking - Tom.

ACDR (Roger.)

ACDR Houston, do you have any recommendations for a new film magazine for the DAC?

CC-H We hear that; we'll check on it.

15 23 44 SCDR INTERFACE SEAL COMPRESS, OFF.

15 23 55 SCDR INDICATOR, OFF. INTERFACE SEAL COMPRESS, OFF.
CC-H Apollo, Houston. The internal camera is getting reflections from the window. Can you move it down a little so we won't see the Sun?
CC-H And, Apollo, Houston. If CX03 is empty, you can use CX04.

15 25 20 SCDR ..., OFF.
ACDR Roger.

15 26 23 SCDR Undocking accomplished.
ACDR (Okay.)

15 28 01 SCDR Tom, be careful ...
SCDR ... now.
ACDR (About 20 meters.)
SCDR 15!
ACDR (Right.)

15 30 56 ACDR What is your range now - rate?
ACDR (Velocity minus.)

15 34 13 SCDR Please inform us about - Apollo stationkeeping.
ACDR (20 meters.)

15 35 27 ACDR (Soyuz, this is Apollo. Now open the reflector covers, as programed.)
SCDR After Apollo stationkeeping.
ACDR (Yes. We are now stationkeeping. Open reflector covers, as programed.)

15 36 05 SCDR In just a moment, we are going to initiate orbital rate attitude: yaw 0 to 180.

15 36 23 CC-H Apollo, Houston. Just a reminder, we need the primary and secondary evaporators deactivated.

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Page 3

ACDR Roger.

15 37 45 CC-H Apollo, Houston. We need the PRIMARY EVAPORATOR to INCREASE.

SCDR ...?

ACDR (...)

SCDR Okay, ... 8.

ACDR ...

15 40 45 SCDR Apollo, Soyuz. We initiated orbital orientation.

ACDR (...)

15 41 34 ACDR (I'm beginning the experiment ...)

ACDR ...

SCDR We don't under - we did not understand you.

SCDR We did not understand you.

DMP ...

SCDR Do you have stationkeeping?

ACDR Yeah. (...)

15 42 10 CC-H Apollo, Houston. You have until 99:39 for full data take if you need the time.

CMP Okay.

15 42 20 SCDR The orbital attitude established.

ACDR (40 meters.)

15 42 38 DMP (Looking through the window on the right.)

CMP (... Over.)

15 44 25 SCDR (- - Moscow. The undocking went normal. The pressure is normal. We are now in orbit - orbital hold - mode. Apollo has left the field of view and we cannot see him so far.)

ACDR (...)

SCDR (The reflectors are opened - 50 meters.)

15 46 11 CC-H Apollo, Houston. We may lose ATS here. If we do, there are angles in your Flight Plan.

15 46 41 CC-H Apollo, Houston. We may lose ATS here. If we do, there are angles for reacquire in your Flight Plan.

ACDR Roger. I've got the plus - pitch, plus 15, and yaw, plus 214.

15 46 51 CC-H Roger. We still read you fine.

SCDR (...)

SCDR (...)

15 49 19 CC-H Apollo, Houston. It looks to us as if you may be out a little far and we think that perhaps a correction down and to the left would be appropriate.

DMP Yeah, that's the way we made the last one.

CC-H Roger.

15 49 41 SFE BEACONS, ON. ORIENTATION LIGHTS, ON.

ACDR (We see your beacons.)

CC-M (Soyuz, this is Moscow.)

CC-H Apollo, Houston. Just another reminder. If we lose the high-gain acquisition, you'll need to go RECORDERS, ON.

ACDR Say again, Bo.

15 52 19 CC-H Roger. If we lose high-gain antenna lockon, you'll have to put the RECORDERS, ON.

15 52 27 ACDR Okay. That's HIGH BIT RATE, FORWARD, COMMAND RESET, right?

CC-H Apollo. It doesn't look like we're going to lose you. We'll try to keep you clued if it looks like we will.

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15 53 33 CMP Okay.
ACDR All right, Bo.

15 59 42 CMP (Soyuz, this is Apollo. Turn off orientation lights.)
CMP (Soyuz, this is Apollo.)
CMP (Soyuz, this is Apollo. Turn off beacons and orientation lights, also.)
DMP (Soyuz, this is Apollo. How do you read?)
ACDR (Soyuz, this is Apollo. How do you read me?)

16 00 50 CMP Houston, Apollo.
DMP (Soyuz, this is Apollo.)
ACDR (Soyuz, this is Apollo. Turn off your orientation lights and beacons.)

16 01 13 CC-H Apollo, Houston. Did you call?
CMP Yes. Hey, would you call the Center and have them - well, I guess we - we're not over the U.S.S.R. but we have a problem. We can't get the Soyuz beacon and orientation lights off. Apparently they're not reading us.
CC-H Roger. Will try.
ACDR (Soyuz, this is Apollo. How do you read?)
SCDR I read you loud and clear, Tom.

16 01 43 ACDR Roger. (Turn off your orientation lights and beacons, please.)
SCDR Tom, I don't understand you.
ACDR (Turn off your orientation lights and beacons, immediately, please.)

16 02 09 SCDR Soyuz ORIENTATION LIGHTS, OFF.
ACDR (And beacons, too.)

ACDR (Also turn off your beacons, please. Turn off both the beacons and orientation lights.)

ACDR (Soyuz, this is Apollo. Turn off your beacons, please.)

16 03 15 SCDR Okay.

ACDR (Thank you.)

SCDR Soyuz BEACON, OFF.

ACDR (Thank you.)

SCDR You were calling our spacecraft?

ACDR (Yeah. Of course.)

16 04 34 CC-H Apollo, Houston. Experiment says it looks like we're getting good data.

DMP I hope so.

ACDR Roger. We had a hard time making them understand to get their beacons off.

CC-H Roger. We copied that.

16 04 44 ACDR Couldn't contact him at first.

16 08 54 DMP (Soyuz, this is Apollo. Turn on beacons and orientation lights, please.)

16 09 10 CC-H Apollo, Houston. We show you've finished your sweep. Could you give us a range reading?

SFE Our BEACON - our BEACON, ON.

CMF (Okay.)

DMP Okay, Bo. Our range reading is .05 to .06; I guess I don't have that much confidence.

CC-H Roger. .05 to .06. And - could you tell us if you visually saw the reflector covers open?

16 09 40 ACDR Yes, I did, Bo. I could - with the spotting scope, I could see each mirror inside of them.

CC-H Thank you very much.

16 12 25 CC-H Apollo, Houston. There are 2 minutes until ATC LOS. We'll see you at Orroral at 99:56.

ACDR Roger.

CMP Okay. And we're tracking in and out of - seems to be looking pretty good, Bo.

CC-H Roger. We'll have to - we'll try to give you a progress report or our evaluation there at Orroral. But it looked pretty good.

CMP Okay.

16 13 03 CC-H And, Apollo, Houston. Just a reminder, the Soyuz crew would be interested in a range readout every now and then.

CMP Yes.

ACDR (60 meters.)

SCDR Roger. 60 meters and -

SCDR 60 meters.

16 13 32 ACDR (Correct.)

16 17 50 ACDR (Soyuz, this is Apollo. And we're ready to turn on spotlight.)

16 18 23 CC-H Apollo, Houston through Orroral Valley for about 2-1/2 minutes.

DMP Roger. Got you, Bo. For your information, we think we got a great bias in the VHF. My guess is ... feet ... Incidentally, we got to ...

CC-H Sorry, Deke, but you were very garbled: could you try again? Heard a big bi - -

DMP I said our VHF ranging has a great bias in it. We gave you .05; I would say we were probably closer to 150 meters than we were 100.

CC-H Roger. I think everybody here concurs.

Day 200

16 19 53 CC-H Apollo, Houston. There is about a minute until
Orroral LOS. AOS at Quito at 100 hours and 26
minutes.

END OF TAPE

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

16 51 20 CC-H Apollo, Houston through Quito for another minute and a half.

ACDR Roger. We've just rolled 180 degrees, Bo.

CC-H Roger. We have a - an item here. Your maneuver looked good. It looked like you were locked on for a good period of time, but we have some doubt that their - their retroré - reflector was performing properly, and so we're going to ask the Soyuz to use their rear retrorélector. To do this, we would ask you to relay to them, their Control Center would like to speak to them through their ship.

ACDR (Soyuz, Apollo.)

SCDR Go ahead.

ACDR (Yes. MCC Moscow wants to talk to you over our ship.) Over.)

SCDR Okay, we are ready.

ACDR They're ready; they got it.

CC-H Roger. Thank you very much - -

SCDR (Moscow, Moscow, this is Soyuz. How do you read?)

CC-H - - and we'd like your ATTITUDE SET to GDC, if it is not.

16 52 27 SCDR (Thank you. We hear you excellently. We are now at 270 90. On the - from the right side, we see the Apollo - -)

16 54 36 CC-H Apollo, Houston through Bermuda. Over.

CMP Loud and clear, Bo. Bo, we have a question.

CC-H Go ahead.

CMP We thought we could see a light leak in their window - or perhaps not covered - one or the other. Would that have any effect on the experiment?

CC-H We'll check.

SCDR (This is Soyuz. I read you excellently. This is Soyuz. I hear you excellently.)

CC-M (...)

SCDR (...)

CC-M (...)

CC-H Command module, Houston.

SCDR (...)

CC-H We don't believe that light leak could have affected it, but we're checking it thoroughly.

CMP Okay.

ACDR Okay. Okay, and you heard, and you might relay to Moscow. We had a hard time getting them to turn off their beacons and lights.

16 55 55 CC-H Roger. We heard that.

CC-M (...)

SCDR (...)

CC-M (...)

16 56 49 SCDR (Okay. We've done that and ... course. Yes, this is Soyuz. We've already done that, and our course now is 270, 90. Roger.)

SFE (I don't understand what's new about this. That's what it was: 270, 90.)

CC-M (...)

SFE (Moscow, this is Soyuz. Our yaw was automatic.)

CC-M (...)

SFE (We got this course automatically, but, in the process of the maneuver ... right window ...)

CC-M (Right now.)

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16 58 22 SFE (We're now doing it. Our yaw now 270, 90. The Apollo will - the Apollo will go off to 500 meters, and we have to follow it and observe it visually through the right window. Correct?)

SFE (How did you read, Moscow?)

16 59 09 CC-H Apollo, Houston. Over.

ACDR Go ahead.

CC-H Apollo, did the light that was coming from the window appear to be as bright as that that was coming back from the reflector?

SCDR (...)

CC-H Apollo, Houston. Over.

17 00 03 SFE (No, we understood, but we have a question. Didn't it come out right with the right window?)

ACDR Go ahead. Bo, are you call - are you calling?

SFE (... not doing anything ... right window.)

CC-H Apollo, Houston in the blind. It looks to us as if you may have bumped the stick.

SFE (Moscow, Soyuz. Do you have anything from the biologists?)

SCDR (... the side one is working ...)

SFE (Yes.)

CC-M (...)

SFE (Yes.)

CC-M (...)

SCDR (Soyuz - -)

17 01 42 CC-H Apollo, Houston. Over.

SCDR (Roger. ... 270 The spacecraft is located We'll move farther away, and we know how to work now.)

SFE (So it's clear for you now.)

CC-M (...)

CC-H Apollo, Houston. Over.

SFE (... 70, 90 How did you read? Moscow, Moscow ...
70, 90. Moscow, Moscow, Soyuz. Over. Moscow, this
is Soyuz. Over. So our course is ... 90. That's
where we'll remain. ... it's the right window
first Alexey, it's in your right window. Okay,
we understand it now. My question is: didn't it work
out from the side window? Roger. Not yet.)

17 03 47 CC-H Apollo, Houston. Over.

DMP Good, Bo.

CC-H Roger. It looks to us as if the Soyuz has started
their maneuver. Can you see it?

SCDR (...)

DMP Negative. Not yet.

SCDR (Of course.)

CC-H Roger. We'd appreciate a call when you are able to
see them maneuvering to their proper attitude.

DMP Well, I'm not sure what's "proper" if they didn't - -

ACDR They're still yawed 90 degrees, Bo.

DMP It said 90 - 90 degrees in the orbital plane, here.

ACDR They're not yawed in plane, Bo; they're 90 degrees
to it.

CC-H Roger. Understand. And you had a question about a
magazine before, and I read you up a new one. If
that one is now finished, you are cleared to use CX05,
which is located in F-2.

CMP Thanks, Bo. For your info, we grabbed that one when
we couldn't find the - called up. We could see it
was a PAO mag.

17 04 46 DMP And, for your info, Bo, the last time we came back into plane, we were sort of in the dark, and, boy, the sunrise - the Sun rising right behind the Soyuz was a real bear. Can anybody tell yet if that's going to happen next time around?

CC-H Apollo, we did not re - read you. You have a bad echo.

DMP Okay, I just wanted to inform you that the last time around, we came into plane in darkness, yet. And turns out that the sunrise is directly behind Soyuz. And we had a difficult time there until the Sun got over our head. I would expect the same thing to happen at the 500 meters.

CC-H Roger. We understand the problem, and I understand that the geometry should be the same, so, again, the Sun will be in your eyes. Apollo, I just gave you some bad information. The Sun will be behind you, so you should be able to see the Soyuz well.

DMP Yeah, we just got a - we just figured that out for ourselves here where it's going to be.

17 06 27 CC-H Apollo, Houston. To get a full data take on this, you need to start the maneuver by 101:08.

ACDR Roger. Is that the data take?

CC-H Apollo, Houston. Over. That 101:08 is the start-maneuver time.

ACDR Understand, Bo.

17 08 13 ACDR (I see you, Alexey.)

SCDR We see you.

ACDR Houston, Apollo.

SCDR ...

CC-H Apollo, Houston. Go ahead.

ACDR (...)

SCDR No.

ACDR Roger.

SCDR ... millimeters.

ACDR (...) Okay. On this start here, right now we're going in-plane forward; and he's yawed 90 degrees. Affirmative?

CC-H The - -

ACDR Is he going to keep his present -

CC-H That's right. He's going to keep that present attitude.

ACDR Okay. Yawed 90 degrees to the velocity vector. All right.

CC-H And, therefore, you should be able to see his rear retroré - reflector.

ACDR (All right.)

MCC-H That's correct.

17 09 56 ACDR (Initiating the maneuver.)

17 10 58 CC-H Apollo, Houston. Over. Apollo, Houston. Over.

MCC-H Okay. He's working there.

17 11 28 DMP Okay. We stopped the maneuver, Bo, if you didn't catch it. I had a wrong switch configuration here.

CC-H Roger. May we suggest that you go back and start again.

DMP Okay.

17 12 21 CC-H Apollo, Houston. We have about 15 minutes until you need to start the maneuver out of plane to get the full data take.

DMP Okay.

CC-H Apollo, if somebody has a chance, we would like PEAK on the out-the-window camera.

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17 13 12 SCDR (- - excellently. Moscow, Soyuz. I hear you excellently.)

SCDR (This is Soyuz. I hear you excellently. How do you read me?)

SCDR (Moscow, this is Soyuz. I read you excellently.)

CC-M (Roger, Soyuz.)

17 14 19 SCDR (Now the situation is as follows. Apollo went by our rear, and we saw it through our right window. The distance was about 30 or 40 meters. It is holding distance very well. Now I'm watching it through the right window. And we'll maneuver should something happen. Over.)

SCDR (It is a 180 degrees roll, in relation to us, upside down.)

SCDR (Roger.)

CC-H Apollo, Houston. We'll be - we'll be coming up on sunset here in just a few minutes.

ACDR Okay.

17 16 35 CC-H Apollo, Houston. There are about 5 minutes until sunset at this time. If someone has a chance, GAMMA 1/2 on the out-the-window camera.

17 18 45 CC-H Apollo, Houston. It looks like you just did your maneuver. Could you confirm that?

CMP That's a - -

CC-H And, Apollo, Houston. We're out of TV; we're just watching data again.

CMP Okay.

ACDR (Soyuz, this is Apollo. Now turn on the beacons please.)

17 20 28 SFE BEACON, ON.

ACDR (Thank you.)

ACDR (Also, turn on your orientation lights, please. I see - turn on your orientation lights.)

17 21 03 SFE ORIENTATION LIGHTS, ON.

ACDR (Thank you.)

SFE (Roger.)

17 22 26 SFE (Standing by.)

ACDR (Soyuz, this is Apollo. Now turn on your ranging, please.)

SFE Roger.

17 24 39 SFE ... On.

17 34 36 CC-H Apollo, Houston. Could we have you hit ERROR RESET?

CMP Roger. We'll hit it again.

CC-H Roger. We don't think that it's any problem, but we'd just like to see if there's another - another light.

ACDR (Soyuz, this is Apollo. Now turn off - please turn off your beacons and orientation lights. Over.)

17 37 39 SFE BEACON, OFF; ORIENTATION LIGHTS, OFF.

ACDR (Thank you.)

CMP Duh-tuh-duh-tuh-duh-tuh-duh-tuh-duh.

CC-H Apollo, Houston. It looks as if we're getting data.

ACDR Yeah, it does.

CC-H And, Apollo, Houston. This data - data does look better than our last.

ACDR Roger.

17 39 38 DMP If you believe our VHF ranging, Bo, we're exactly 500 meters, but I don't.

CC-H Roger. Understand. You show yourself at 500 meters.

DMP That's what the gage says.

CC-H Apollo, Houston. If you called, you were very weak.

17 41 50 SFE Apollo, Soyuz. What is the range now?

DMP (500 meters.)

SCDR Repeat it. What is the range now?

DMP (500 meters.)

SCDR 500 meters.

DMP (Yes,)

17 43 21 CC-H Apollo, Houston. Houst - Experiments liked your data.

DMP Okay. It looks good from here. Should be locked in the center of the yaw and the pitch.

CC-H Roger.

17 47 24 ACDR Data take complete, Houston. (Soyuz, this is Apollo. Turn on beacons and orientation lights.)

17 47 48 SCDR Okay. Soyuz ORIENTATION LIGHT, ON: Soyuz BEACON, ON.

ACDR (Thank you. I see your beacons and orientation lights.)

CC-H Apollo, Houston. Over.

ACDR ... Go ahead.

CC-H Roger. Looks like you're still above the redline but getting close. And we'd like to remind you again about the switchover on the PSM. And if you switch, we'd like you to be in - -

ACDR Okay. Do you want a switchover on the PSM and - -

CC-H Not now, but when it gets down to - -

ACDR 10 percent.

CC-H - - 10 percent.

ACDR/CMP Rog.

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CC-H And, Apollo, Houston. When you do do the switchover
from PSM, we'd like you to be in SCS, MIN IMPULSE.

ACDR Roger. SCS MIN IMPULSE.

17 48 55 CC-H And we have LOS coming right up, and we'll see you
at MILA at 102:02.

ACDR Roger.

CMP Houston, Apollo.

CC-H Roger. We're going LOS. You got about 9-1/2 minutes
of data. Go ahead.

CMP This is - Apollo, Houston. We got out to 0.24 on the
EMS, which obviously biased - -

CC-H Roger. 0.24.

17 49 49 CMP - - on the 500 - -

END OF TAPE

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Time: 200:18:00 to 200:19:30
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ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

18 23 59 CC-H Apollo, Houston through MILA. Over.
ACDR Roger, Houston, 5 by.
ACDR ..., Bo. How do you read me?
CC-H Roger. We read you weak but queerly [sic].
ACDR Okay. We're stationkeeping here after the 500.
And - we'll be doing our pitch maneuver at 52 on
schedule. ... 16 ...
SCDR Before pitch maneuver, we are going to photograph
Apollo. Just now, I am going to see your space-
craft.
ACDR (Alexey, I see you through the observation window.)
18 24 48 CC-H Apollo, Houston. If you see the Sun coming in the
window, would you preas - please put the TV full
close, so it doesn't damage the TV?
ACDR Roger.
ACDR You getting a good picture, Bo?
CC-H Negative. Right now, we're not getting anything.
SCDR In 1 minute, I am going to initiate yaw maneuver.
ACDR (In 2 minutes, Alexey, we will begin.)
SCDR Before our pitch maneuver, we are going to photo-
graph Apollo.
SCDR I am going to perform your maneuver. And photograph
Apollo.
ACDR (I understand that. I will perform a pitch maneuver
in 1 minute and 30 seconds.)
18 26 55 CMP (Our maneuver will begin soon in ...)
SCDR Vance, we are going to see your spacecraft in our
right screen. Do you understand me?

18 27 13 SCDR We are going to photograph Apollo before our pitch maneuver.

CMP (Yes. Understood.)

ACDR (Soyuz, are you ready to photograph the Apollo?)

SCDR *** for rotation.

18 28 48 ACDR Houston, Apollo. How do you read?

CC-H Apollo, Houston. Go ahead.

ACDR Yeah. We're a little confused about what's going on up here. We were ready to do our pitch rotation, and Soyuz is just going through a 180 yaw at the present time - which we weren't aware of as being in the Flight Plan. Anyway, we're going to hold up here until we see what happened.

CC-H Understand.

18 29 22 ACDR Yeah, we were ... there for a second.

ACDR (Do you see Valeriy with the camera?)

ACDR (Soyuz, Apollo. Are you ready to photograph Apollo?)

SCDR Ready to photograph Apollo.

18 31 26 SCDR We are doing the pitch maneuver.

ACDR (1 minute, please.)

CC-H Apollo, Houston. Over.

ACDR Go ahead.

CC-H Since you've been delayed, we'd like to remind you that the second separation burn needs to be done exactly 8 minutes after the first.

ACDR Exactly 8 after the first.

CC-H Roger.

ACDR Yeah - -

CMP That's good to know.

ACDR - - we - we understood that, Bo, and we were going to re - start in 52 minutes.

CC-H Roger.

18 31 58 ACDR He just finished his 180 yaw and in the process, we've closed on him a bit. So we're opening up.

DMP You got a picture there, Bo, as we come across Florida? ... coming across some other place.

CC-H Negative. We don't have TV here yet.

CMP It's really great.

SCDR (... for yourself.)

18 32 37 CC-H Apollo, Houston. You're clear to do your separation.

CC-H Apollo, Houston. Could you tell us what your status is?

18 34 32 ACDR (I'm beginning the maneuver.)

18 34 45 ACDR (I'm beginning the tangent.)

18 38 22 ACDR ...

CC-H Apollo, Houston through ATS again. Standing by.

18 42 30 ACDR (I'm beginning the maneuver from you.)

CC-H Apollo, Houston. When you have a chance, switch the PSM; we show it's empty.

CC-H And, Apollo, Houston. The ATS angles are minus 24 and 150.

18 43 25 ACDR (Soyuz, this is Apollo. Maneuver completed.)

ACDR (Soyuz, how do you read?)

CC-H Apollo, Houston. Over.

CMP (Soyuz, this is Apollo.)

ACDR (Soyuz, this is Apollo. How do you read me?)

CC-H Apollo, Houston. Over.

CC-H Apollo, Houston. Over.

ACDR Go ahead, Houston.

CC-H Roger. You can switch your PSM; we show that it's empty. And your high-gain antennas are minus 24 and 150.

ACDR Minus 24 and 150. Roger.

CC-H Roger.

CMP And we're showing - -

CC-H And the PSM is on Systems Checklist 1-3.

CMP Roger. And we're showing 14, but we'll switch over - 14 percent.

18 45 08 CC-H Apollo, Houston.

ACDR Okay, Bo, I've got minus 24 and 150 on REACQ.

CC-H Understand.

ACDR Houston, Apollo.

CC-H Apollo, Houston. Go ahead.

ACDR ...

USSR (Moscow, I read you excellently.)

CC-H Apollo, Houston. Go ahead.

18 46 15 ACDR Roger. I guess we're locked up now, and we're switched over to the quads.

CC-H Thank you.

CC-H And - -

SCDR Vance, how do you read me?

CMP (Excellently, Alexey.)

SCDR Thank you very much for your big job.

CMP (Thank you, also. This was a very good job.)

SCDR ... was well done.

18 46 52 CC-H Apollo, Houston. Could you tell us the status of the evaporators?

SCDR A very good show.

SCDR Now I see your spacecraft very, very ***

ACDR (Unfortunately, I cannot see you. All of the Sun is in the window.)

SCDR Yeah, yeah, yeah, yeah. Sorry.

18 47 37 CC-H Apollo, Houston. Over.

ACDR Go ahead.

CC-H We'd like to confirm you've deactivated primary evaporators - and secondary, as well.

ACDR That's affirmative. We've deactivate ***

SCDR ...

SCDR After - after our flight - after our flight, I will do - -

ACDR (All right.)

18 49 24 CC-H Apollo, Houston. Over.

ACDR Go ahead.

CC-H Is that checklist to protect the camera from the Sun?

ACDR Yeah. It sure is.

CC-H Okay, we couldn't tell whether you were trying to show us something or - protect the camera.

ACDR No, Bo, that Sun was right into the camera. Now it's just setting. And there's Soyuz. Maybe you can see him. Right there in the sunset. It's beautiful.

CC-H Negative. We don't have a picture.

ACDR I believe - we couldn't see him for the last 5 minutes, Bo, and - -

18 50 30 CC-H Apollo, Houston. We're back in the data mode now.

SCDR Apollo, Soyuz.

ACDR (Please turn on your orientation lights. Also, please turn on your ranging. All right.)

18 52 26 CMP (Soyuz, this is Apollo. Please turn on your ranging.)

SCDR Repeat.

SCDR Apollo, Soyuz. Repeat it.

CMP (Alexey, please turn on your ranging mode.)

SCDR Okay. Tom?

CC-H Apollo, Houston. We're just approaching the experiment redline.

ACDR Okay.

18 53 22 ACDR Roger. We have our separation burn and we're going away. Track ...

CC-H Roger.

CC-H Apollo, Houston. The PIs would like the experiment doors open a little early. If you can do it now, we'd appreciate it.

CMP Roger. Understand. Experiment doors open.

CC-H Roger.

ACDR (Soyuz, this is Apollo. Turn on your orientation lights, please. I do not see you.)

CC-H Apollo, Houston.

USSR ...

CC-H Just a reminder - for the procedure, turn the jets off before you open the UVA door.

ACDR Rog.

SFE How do you read me?

ACDR (Very good. Very, very good, Valeriy.)

SFE What did you say before?

18 55 18 CMP (Nothing, Valeriy.)

SFE ...

18 57 29 CMP Houston, we're opening the door now.

CC-H Roger. Copy.

18 58 12 CC-H Apollo, Houston. We seem to have lost range data. Could you please do a VHF RANGE RESET?

ACDR (Soyuz, this is Apollo. Now turn on ranging.)

SFE What did you say?

ACDR (Nothing, nothing. Ranging established.)

SFE What is the range now?

ACDR (1000 meters.)

18 59 28 CMP (Valeriy, distance exactly one-third mile.)

19 02 20 CMP Houston, Apollo.

CC-H Apollo, Houston. Go ahead.

CMP Bo, right now it's very interesting. We're looking down on him, and he's got a beacon flashing, and we can see the two lights very well. He's pulling ahead of us, and you can see the dark Earth in the background; it's - just as if an airliner's maybe going underneath us and pulling ahead of us a little bit; maybe 1000 feet below us or so.

CC-H Roger. Thanks. We don't have TV, only data right now. Could we ask you to hit the VHF RANGE RESET again?

ACDR Okay, we'll try her.

ACDR Okay, nothing happened again.

ACDR (Soyuz, this is Apollo. Please check your VHF ranging. Over.)

SCDR On.

ACDR (Thank you, thank you.)

CC-H Apollo, Houston. I have UVA supplemental data here. Is someone free to copy?

ACDR (Soyuz, this is Apollo. Now please turn off your orientation lights.)

SCDR You want the orientation lights on - off?

CMP Houston, Apollo.

CC-H Roger. I have a change to you at the end of this UVA. Ready to copy?

ACDR Go ahead.

19 05 12 CC-H Roger. At 102:50, we'd like to - there's a VERB 49 maneuver; we'd like to change that to read - at 102:52, change the VERB 49 maneuver to UV in-plane scan attitude 202, 301, 320 by 102:59.

ACDR Roger. Change it to UVA in-plane scan - angles 202, 301, 320 by 102 plus 59.

CC-H Roger. That's after this 1000-meter course, and maneuver to out-of-plane attitude by 103:04.

19 06 08 CMP Houston, Apollo. We have a little problem here on getting data. We haven't asked him to turn off his beacon yet, because it's just impossible to see the reflector at this distance.

CC-H Understand.

CC-H And, Apollo, Houston. Down about 103:30 it calls for waste water dump; don't do that dump.

CMP Roger.

ACDR (Soyuz, this is Apollo. Now please turn off your beacons.)

19 06 55 SFE Roger. Turn the beacon ... off?

ACDR (Soyuz, this is Apollo. Please turn on your orientation lights.)

SFE Roger.

19 07 11 SFE Orientation lights.

ACDR (Thank you.)

ACDR Hey, Bo. Can you tell us whether they're getting data or not down there?

CC-H Experiment says we're getting data.

CC-H Apollo, Houston. It looks like you're still getting good data.

ACDR Amazing.

19 08 52 CMP Okay, Houston, is that enough sweep data for you?

CC-H I'll check with Experiments.

CC-H Apollo, Houston. We'd like you to continue.

CMP Okay.

CC-H And, Apollo, we'll probably lose you on ATS and not pick you up again until Vanguard at 103:13.

CMP Okay, Bo.

ACDR Do you want to give us a cutoff criteria on this data take?

CC-H Roger. I'll ask Experiments again.

CC-H And, Apollo, Houston. We'd like you to track the light there for a second, so we can see what the light looks like on our data and then be able to filter that out later.

ACDR Okay.

CC-H And as soon as you do that - -

CMP Now, that means you want to - -

CC-H - - you're ready to terminate the experiment.

CMP Okay. Do you want to - Never mind.

ACDR What I've been doing, Bo, is fudging on the orientation light to where I think the beacon is because I think that's where the reflector is.

CC-H Roger. What they'd like you to do would be to track the light for a bit so that perhaps they can determine something from that and later filter that from the data. And as soon as you're finished with that you're cleared to go on to the in-plane scan attitude.

ACDR I understood that.

CMP You mean this beacon light, Bo?

CC-H Roger.

19 11 34 ACDR Okay. I'm done tracking the light.

CMP Do you need any data on the beacon, too, Bo?

CC-H Roger. We've got enough. You can now go to the in-plane scan attitude.

CMP Okay. Roger.

CMP I'd be curious to know - could you see any data from that little red light?

CC-H We don't think it looked any different, but they're evaluating it.

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CMP Okay.

CC-H Apollo, we see you maneuvering, and you're going to lose ATS. We'll see you at Vanguard at 103:13.

ACDR Okay.

DMP Okay, we're maneuvering, and we'll do the out-of-plane maneuver at 103:04. 103 plus ...

19 13 41 CC-H Roger.

END OF TAPE

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TAG Tape 200-11/T-56

Time: 200:19:30 to 200:21:00

Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

19 33 49 CC-H Apollo, Houston through Vanguard for over 7 minutes.
ACDR Roger, Bo.
CC-H If you people have a second, I'd just like to give you a little report, here. There's no writing required.
ACDR Go ahead.
CC-H Well, we'd like to all congratulate you on the TV pictures. They were just great. Sorry we bugged you so much about the settings, but we've been running them down here, again and again, of that undocking and the UVA stuff. Talking about the TV, we would like you to turn OFF the three TV POWER switches down there on 181 - if you haven't already done so.

19 34 26 ACDR Yeah, I got those OFF by the checklist and the AMPLIFIER to BYPASS.
CC-H Great. The 150 data take - 150-meter data take - really looked smooth. I don't think you dropped out of there for more than a few seconds. Perhaps you were always on. The PI thinks there may have been some reflection off of the Soyuz window that degraded some of the data, although he thinks that we did receive good fluorescence data on the 150-meter data take.
DMP That's encouraging.
CC-H The 500 meter was flown perfect, just as - as was the 150, and we received excellent data. The PI has, on his little report here, that it was just perfect. 1000 meters - we're still interpreting the data, and they're not sure whether they got data off of the retroreflector or not, but that's still to be seen. However, it did look like you were locked up on something. And so, you people flew it fine. We're still about 60 pounds above the experiment red-line, and so there still should be enough gas to do everything else in the mission that's - that's programed.

19 35 45 DMP Okay. Great, Bo. And you can thank old Roger Burke, Steve Grega, and Bob Anderson down there - that this thing came off right, because they sure did all the work to make it go.

CC-H Roger. I'll tell them.

ACDR Bo, we have one question. On this urine dump - prepare for urine dump - we can dump it out of the bags but, also, what about the normal use of Myrtle. Can that be used? Over.

CC-H Apollo, Houston. At the scheduled urine dump times, you can dump any urine overboard from wherever you get it.

ACDR Okay, (laughter) Bo. Thank you.

CMP And Bo, as long as nice words are being said, I'd like to say that this is - the spacecraft's really been running well. G&N is just perfect, and as we all know, the new docking system is flawless. This sure is a pleasant thing for us up here.

19 37 19 CC-H Roger. Thank you.

DMP Just for your info, we got into trouble in the start of both of those sweeps. The 150 - Vance was so fast getting into the EMP 31 that I hadn't stopped our opening rate yet, which is my fault. And the second one, we started the sweep burn in ACCEL COMMAND instead of in RATE COMMAND, which threw us out of attitude, obviously. I just knocked it off, and went back and started all over. That's probably where a lot of our fuel went.

CC-H Roger. You had us all excited here on the beginning of each one of those, but you recovered beautifully. And those sweep burns were just as if - they were drawn right over the - the nominal line.

DMP Everybody helped up here, too.

19 40 16 CC-H Apollo, Houston. There is 1 minute until LOS. We'll see you at Rosman at 103:39.

20 00 13 CC-H Apollo, Houston through Rosman for a little over a minute.

20 01 01 CC-H Apollo, Houston through Rosman for just a few seconds. We'll see you again at ATS.

20 06 59 USSR (1441.)

20 07 11 CC-H Apollo, Houston. We have AOS, ATS.
USSR ... (after 2 minutes. 12, 400, right?)

20 07 47 CC-H Apollo, Houston through ATS. Over.
DMP Roger, Bo. Got you. Go ahead.
CC-H Roger. How are things?
DMP Oh, just fine. We - we were just breaking out the chow here and trying to cook it up.
CC-H When you get settled down, I've got a couple things for you. Most of them don't require any copying. Just tell me when you're ready.
DMP Okay. We're ready if you don't ... to write.

20 08 27 CC-H Okay. The first is about waste water. It seems that we're getting marginal on waste water, and we can't use potable water for cooling. And we suggest that once you get comfortable, you shut down the secondary loop and the pump, and we think with the cameras off and the power amp off, it should stay comfortable there in the command module. We don't think the secondary loop without the evaporator helps very much, and we think that the pump and the secondary loop actually adds heat. And we'd like to caution you - -
DMP Okay, well, we think - -
CC-H Go ahead.
DMP Go ahead.

20 09 11 CC-H Oh, we'd - just one little caution. We'd like to say that when shutting down the secondary evaporator, you've got to be careful to stay in the RESET position for about a minute, or the evaporator will flash-freeze.

20 09 30 DMP Okay. I think, Bo, the DM will probably, in my opinion, start cooling down, since we've undocked. At least, I think that's the case. It was pretty cold down on the Soyuz end, up until we docked, and I noticed it was pretty warm in there last night. Be interesting to see what it is by tomorrow.

20 09 49 CC-H That's good news. We also think, with all the cameras off now, and with the ATS power amplifier off, and things like that, that we're not going to have the heat load in the command module.

20 10 02 DMP True.

CC-H The worry here is that we're going to run out of waste water, and then we won't have an evaporator to use, and we'll be hot for an extended period of time.

DMP Copy.

20 10 23 CC-H I've got one thing for Tom Stafford. Gene Cernan talked to Weatherford, Oklahoma, today, and he found out there that everything is fine, and Tom's mother is very proud of what's going on in the Apollo spacecraft.

ACDR Ah, real good. Thank you. Give her our regards. Thank you, Bo.

20 12 29 CC-H Apollo, Houston. We'd like someone to inhibit the AC ROLL so that the AUTO RCX - AUTO RCS SELECT switches agree with the DAP.

20 12 43 ACDR Want the AC ROLL OFF.

20 12 45 CC-H Roger.

20 19 93 CC-H Apollo, Houston. Over.

ACDR Go ahead, Houston.

CC-H This concerns the waste water. We know that your gage is very noisy and ours is noisy too. But they've been plotting the average, and they feel that the waste water tank is now down to about 15 percent, or 9 pounds, and so we'd like you to not evaporate, if at all possible.

Day 200

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Page 5

CC-H The secondary loop, that is.

20 19 36 ACDR Okay, secondary. Keep the primary on? Over.

CC-H Roger.

20 19 41 ACDR Okay, we got the secondary loop off now, Bo.

20 19 45 CC-H Roger. And we'd like you to shut the secondary loop totally down and turn the pump off, too.

20 19 53 ACDR We've got the evaporator reset and the pump is off.

CC-H Thank you.

CMP Bo, would you like us to close the potable inlet for a while?

CC-H Let me ask EECOM.

20 20 53 CC-H Apollo, Houston. We agree with you. We'd like you to close the potable tank inlet valve.

20 21 00 CMP Okay, Bo.

20 24 46 CC-H Apollo, Houston. We're getting ready to dump the VTR. You won't have any downvoice for about a half hour while we dump it.

20 24 54 ACDR All right.

20 51 16 CC-H Apollo, Houston. We're back with you for a few minutes until ATS LOS.

ACDR Okay.

CC-H I have a couple of items. Two of them are questions and one is a task. Is someone free who can answer the questions?

ACDR Go ahead. We're still eating. No problem.

CC-H Okay. One is, what was the relative brightness on the window light - of the window light on Soyuz on the 150-meter UVA with respect to the retroreflector?

ACDR Deke's off the headset now. He's the only one that can answer that.

CC-H Okay. The other one is also on the UVA. And the request is, after you finish your dinner, we'd like someone to go down and open the cryo freezer cap, and then replace the cryo freezer cap. And the reason we're doing that is we think that there may be some ice buildup. And we'd like to break it loose so that it can be opened at a later time.

20 52 39 CMP Tom would like to know how long you want it open, Bo.

CC-H Roger. Just long enough - -

DMP Bo, this is Deke.

CC-H Apollo, Houston. Just long enough to open it, wait a few seconds, and put it back on.

DMP Bo, Deke. Are you trying to call me?

20 53 05 CC-H Roger, Deke. We had two questions on the UVA. The first was, what was the relative brightness of the window light on Soyuz on the 150-meter UVA with respect to the retroreflector?

DMP Well, the retroreflector was brighter. But I was very surprised that I could see that window light down there, and I couldn't see it well after the 150. It was dimmer - -

CC-H Deke, I'm afraid you were broken up. We heard you say that it was dimmer, but after that we couldn't read what you said.

DMP I said it was obviously dimmer. It's difficult for me to evaluate numerically how much dimmer. I'd say maybe 4 or 5 times. However, we had a pretty good cal, I think, and I was locked on pretty well to the reflector, and I would guess there might have been a degree displacement down to the window. So I would hope that the good data you were getting is coming from the reflector instead of the window.

20 54 27 CC-H Roger. Understand. And were you able to keep the COAS centered on the retroreflector while the Soyuz test meter indicated 2.5 volts?

DMP That's affirmative.

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Page 7

CC-H Okay. And - -

DMP It's either that or a cal mark.

CC-H Roger. Do you have any other comments, while they're still fresh, about the UVA?

20 54 53 DMP Well, as far as the data takes are concerned, they went pretty good, I think. We had the trajectory pretty well accurate. Initial conditions were all right. Sweeps went well. And we were locked on pretty good all the way through. 500 - ... was surprised that it was pretty easy to see the reflector. 1000 meter - -

20 55 19 CC-H Deke. Do you read?

20 55 27 CC-H Apollo, Houston.

20 56 59 CC-H Apollo, Houston through Orroral on VHF for about 2 minutes. I'm sorry we had a little bit early LOS there. If we - if you'd like to continue, go ahead.

 CMP Stand by 1, Bo.

 CC-H Roger. There's only about 1 minute left until LOS now. We'll see you at Vanguard at 104:47.

20 57 36 DMP Okay, Bo. Vanguard. ... lose you.

END OF TAPE

Day 200

TAG Tape 200-12/T-57
Time: 200:21:00 to 200:22:30
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

21 07 03 CC-H Apollo, Houston. Hello at the Vanguard for 5 minutes. How y'all doing?

CMP Just fine, here, Dick. How are you?

CC-H Doing real great. Sounds like you guys have had another good day.

CMP Yes, it's been a big day and a lot of fun.

CC-H Well, it sure sounded like that down here. It's a real pretty day outside in Houston.

CMP That's right, it still is day - daytime in Houston. Seems to us like it ought to be nighttime over there.

CC-H Apollo, Houston. Two switches on panel 230 we'd like you to check. First, we would like the UP TELEMETRY switch to DIRECT and also the UV ABSORPTION POWER to ON. It's - that second one is listed in the Flight Plan.

ACDR Okay.

21 08 07 ACDR We have the UP TELEMETRY to DIRECT and the UV ABSORPTION POWER, ON.

CC-H Okay, Tom. Thanks a lot.

CC-H Okay. Now, Tom, while you're down there. We'd like UP TELEMETRY back to UP TELEMETRY; that's center. We need it to get in a quick command there.

21 08 27 ACDR Okay. I have UP TELEMETRY, center.

CC-H Okay. Thanks.

DMP Hey, Dick. The last time we talked to Bo, I guess we lost comm in the middle of the transmit there. But I don't have any idea where we lost it. Do you think you guys have any specific questions on the UV you wanted to ask me?

CC-H Okay, Deke. I tell you what, why don't we - I'm sure the Experiment Officer is going to be listening

to that tape, and so he'll know where you lost it. And if we need any more information from you, we'll write up a mission note and ask you a little bit later. Okay?

DMP Okay.

CC-H Apollo, Houston. We're 1 minute from LOS. I'll give you a call at Goldstone at 105 plus 05.

21 11 21 CC-H Apollo, Houston. I understand I dropped out. We're 30 seconds from LOS. Goldstone at 105 plus 05.

21 24 39 CC-H Apollo, Houston. Goldstone for 6 minutes.

ACDR Houston, Apollo.

CC-H Go ahead, Tom.

DMP Okay, this is Deke. We had you once there. We lost you apparently.

CC-H Oh, okay. Yeah, I gave an AOS call and didn't hear anything. We still have about 5 minutes here at Goldstone.

DMP Roger.

DMP Okay. We're finishing up the food here and then the leg measurements, fluids levels, and all that good stuff. Tom's been down - working on the freezer. He's got a couple of problems there which we were just about to look at. ...

CC-H Roger.

ACDR Yes, Dick. You know, I was going to open the freezer as requested. Just open it up and put her right back. You were afraid ice was forming. When I started to turn the cap, you know, from the lock position over, I could tell it had a lot of kind of memory in the system. It was very hard. I finally got it over to the place. And now I've had to brace my feet against the bulkhead, take both hands, and I'm just barely starting to move it. And the way that foam's formed, I'm afraid I'll just pop the top right out of it. So we're going to take it very easy with it.

CC-H Okay. Copy, Tom. And if you - why don't you guys just keep working on it and keep us advised ...

ACDR Okay. Yes. Well, we're working very gently up here, but it's really stuck in the bottle.

CC-H Roger. Understand.

21 27 07 CC-H And, Tom, Hous - Tom, Houston. We thought that might be the case because of the things we were doing with the cabin pressure last night. We thought you probably would have some trou - have some trouble. And that's the reason we wanted to go ahead and crack it this afternoon and see how much trouble you would have, or if you could get it off.

ACDR Okay. I'm working on it right now.

CC-H Okay. Fine.

ACDR ...

CC-H Apollo, Houston. Yes, go ahead.

ACDR ...

CC-H And, Tom, Houston. For some reason, about the first couple of minutes of this pass, we could barely hear either you or Deke - Deke - I was - then all of a sudden we were hearing you loud and clear, and Deke is still kind of down in the mud. He might reposition the mike if he gets a chance.

DMP Okay. How do you read now?

CC-H That's better, Deke. Thanks.

DMP Okay.

21 28 43 ACDR Okay. I got the cap - cap (cough) - I got the cap off, then I recycled it just real fast a couple of times. It's lots easier.

CC-H Okay. Fine, Tom. Thanks a lot.

CC-H Apollo, Houston. We're 1 minute from LOS Goldstone; Newfoundland in 5 minutes from now.

21 30 25 ACDR Okay.

21 38 53 CC-H Apollo, Houston through the satellite. How do you read?

CC-H Apollo, Houston. How do you read?

CC-H Apollo, Houston. Through the satellite, we've got a lot of loads to get in this pass. We'd like ACCEPT.

ACDR ...

CC-H Tom, we'd like ACCEPT. We've got a - Guidance Officer's got a whole bunch of loads he needs to get up during the pass.

ACDR ...

21 40 58 ACDR Okay. You got it.

CC-H Roger. I can - I can hear you keying. I can't hear you - what you said, but I do see we have ACCEPT. Thank you much.

CC-H Apollo, Houston. One thing on configuration, we see that RHC number 2, DIRECT POWER is ON. We think that probably ought to be OFF. And also, we'd like to confirm that Deke has reconfigured the - the various comm switches that are listed at about 105 hours.

DMP Okay, Dick. We're still apparently trying to get regrouped around here; eating, et cetera. We aren't quite with you yet. Stand by.

CC-H Okay. There's no hurry. We - we thought you probably were with us. No problem.

21 47 02 DMP Okay, Dick. We've got the comm reconfigured. What happened here is, we kind of skipped ahead and got on with the leg volume measurements. In fact, Tom and Vance are up in the DM doing that now, so we're a little spastic here.

CC-H Okay. No problem, Deke. Thanks for letting us know.

DMP Hey, Dick. You guys know when Soyuz reenters?

CC-H I'm sorry, I heard a question about Soyuz, but didn't copy. Say again.

DMP Yes. Do you know when they reenter? Is it tomorrow or later?

CC-H Oh, let me get you a time. Stand - stand by just a second.

DMP It's no big deal; we're just curious.

CC-H Roger. Understand.

21 49 33 CC-H Apollo, Houston. Deke, Soyuz will be up just something over another 24 hours. The time that they'll be coming down is 141 hours and 40 - something minutes, and that's about 5 a.m. - central daylight time here in Houston. And according to Flight Plan, you guys will be in the middle of a sleep period.

DMP Oh, okay. Thank you.

CC-H Apollo, Houston. I'm certainly in no hurry, because I don't know how busy y'all are at the moment. But, Tom, I can brief you on what we're uplinking into the computer whenever you have a chance to lis - listen. And also, I've got an update for the mapping pass you're going to do here in a couple revs, whenever you can copy that. No hurry on either one. We still got about one-half hour left on this ATS pass.

DMP Okay, Dick. I'll have him call you when he gets back down. We had a small disaster here. We lost the leg measuring tape.

CC-H (Laughter) Okay, let me know when y'all have a chance to listen. No - no hurry.

21 54 36 DMP Okay.

CMP Houston, Apollo.

CC-H Apollo, Houston. Go ahead.

CMP Dick, we're - we're just in the midst of some leg measurements, and I'm finished with mine. I can copy down anything you have.

CC-H Okay. There were - there was two things I wanted to tell you, Vance. One, I wanted to brief you on what we were doing to the computer. I can talk about that real - real fast here. What we're doing is we're uplinking the raster scan EMP; we're giving you a new orbital REFSMMAT; we're giving you a good state vector; we're fixing some DAP constants and one - one little oddball bit that was set during the UVA today; and - and we're also going to give you a high-gain EMP. And the - I do have a update to the next mapping pass. It's in the Earth Obs book.

22 02 35 CMP Okay. Stand by and I'll get it.

CC-H Okay.

CMP Okay. Ready to copy.

CC-H Okay, Vance. This is on mapping pass M-6 and I've got a start and a stop time update for you. The start time is as follows: 107:41:30; stop time, 107:53:30.

CMP Rog. Rev 64, M-6 mapping pass: start time, 107:41:30; stop time, 107:53:30.

CC-H Okay. While you're at it, if you can get out - if you've got the Flight Plan there, I've got a - at the tail end of today at about 108 hours and 40 minutes, I've got a couple of deletions there.

CMP Okay. Ready to copy.

22 04 23 CC-H Okay. It's real simple, Vance. In the AC's column at about 108 plus 40, where it says, "Verify cabin vent QD installed" and the "WASTE STOWAGE VENT to VENT" and also that note below that, delete all of that; we're not going to have to do that tonight. In other words, delete starting at "Verify cabin vent QD" all the way down through the note that says the time of "109 plus 29."

CMP Okay. That was - Oh, I see; I see where the note is. Okay. That's all - that's deleted from "Verify cabin vent QD" - through the following three steps after that.

CC-H That's right, Vance. And that's all I've got right now. Thanks a lot. We still got about another 20 minutes here, and I'm standing by.

CMP Okay. Very good. And - with - if it's okay with you, we didn't turn off VHF FM the appointed time. We thought - you probably wouldn't mind if we left it up until we're out of range of Soyuz, or until sleep starts.

CC-H Okay. Thanks for letting us know, and I don't think we'll have any objection to that, but we'll talk about it here for a second. And keep the Flight Plan out just a second. I think there may be one more correction I have. Hang on just a minute.

22 05 55 CMP Okay.

CC-H Vance, Houston. I've got another correction in the Flight Plan in your column at 108 plus 32.

CMP Okay. Go ahead.

CC-H Okay. All I want to do there is delete the "rewind" out of that "Configure DSE" loop. And the reason we're doing this is we're planning on having you stop the DSE there, and then we're going to dump the raster scan data down here real quick - so we can take a look at it tonight.

22 06 44 CMP Okay, the "Configure DSE stop/rewind and command reset," I deleted "rewind."

CC-H That's right. Okay. Thanks a lot. I'll talk to you later.

CMP Okay.

CC-H Vance, Houston.

CMP Go ahead.

CC-H Hey, Vance, Bob Overmyer called from over at Moscow. The Soyuz crew has already gone to bed tonight, so we'd suggest turn the VHF FM to OFF now. But we certainly don't see anything wrong tomorrow, when you get up, to turn it back on and monitoring that

frequency during the day. Also we've got all the uplinks up, and you can go back to BLOCK; the computer's yours. And one other comment that doesn't require any action by you now, but down during the presleep period, there's a note about updating the lift-off time, and be advised we are going to update the lift-off time tonight by about 2 minutes.

22 10 30 CMP Okay. In other words, you're just - What do you mean lift-off time? You're just adjusting GET, is that right?

 CC-H Yes, yes, that's - that's right. We're - It's just an uplink to it - to up - update the CMC - -

 CMP Acquisitions.

 CC-H That's right.

22 10 55 CMP Right. Okay.

22 25 56 CC-H Apollo, Houston. We're a couple of minutes from ATS LOS. I'll give you a call at Orroral Valley in 4 minutes. See you there.

 CMP Okay, Dick. See you.

 CC-H Okay.

 CMP Just saw a beautiful sunset, or sunrise.

22 26 09 CC-H Roger.

END OF TAPE

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

22 30 50 CC-H Apollo, Houston. Orroral Valley for 3 minutes.
CMP Okay.
CC-H And, Vance, Houston. Any time you have a chance, I'm not in a hurry because we've still got a couple of hours, but I've got an update to the raster scan time and a couple of comments. And that's in the Flight Plan at 108 hours and 25 minutes.
CMP Okay.
CC-H And, Vance, we do not need to get this up this pass if you're busy. No problem.
CMP Okay, I've got it here.
CC-H Okay. The time in the Flight Plan is 108 plus about 25. It's in the AC's column. The raster scan time should read 108:25:42.
22 31 50 CMP Okay. The new time is 108:25:42.
CC-H Okay. And right below that, Vance, we'd like to change - see that VERB 49 maneuver, and right after the VERB 49 maneuver, there's a parenthetical statement that says "By 108 plus 50." We'd - we'd like you to delete that and replace the "By 108:50" to read, "Not before 108:32."
22 32 17 CMP Not before 108:32. Okay.
CC-H Yeah, and the reason for this is, is that'll give you - that'll make sure that the EUV raster scan EMP is complete prior to the VERB 49 maneuver, which would - And we don't want to do the VERB 49 on top of it. Plus, it starts the VERB 49 maneuver to SI, in order for us to get as early a possible ATS acquisition so we can get the raster scan data down.
CMP Okay.
CC-H Okay, we're about a minute from LOS. Hawaii comes up at 106 plus 27. And incidentally, I meant - meant to tell you awhile ago, but the reason we're interested

in getting this raster scan data in a hurry, is - is since we didn't do a raster scan the other day, as you recall on - I think that was the second day, we want to take a look at this and - and make sure if there are any minor pad changes for tomorrow's work, we can get to work on them as soon as we can.

CMP Okay; understand.

CC-H Okay. See you at Hawaii.

CMP Righto. Out.

CMP Aloha.

22 33 27 CC-H Aloha.

22 47 52 CC-H Apollo, Houston. Hawaii for 7 - 6 minutes.

ACDR Roger, Dick. Understand.

CC-H Roger, Tom. And I don't have anything for you here. We're standing by, we - I'm assuming that you haven't started - we don't see any time on the VTR so I'm assuming that that setup is still going on.

ACDR On the VTR?

CC-H Well, I was looking at these demonstrations that I'm assuming Deke is setting up to put on the VTR.

ACDR Yeah. Deke's working that right now.

CC-H Okay. No problem.

CC-H Apollo, Houston. We're 1 minute from LOS Hawaii. We'll see you when you get locked up on the satellite.

22 53 12 ACDR Roger.

23 11 23 CC-H Apollo, Houston through the satellite. How do you read?

ACDR Loud and clear. How do you read us?

CC-H I read you loud and clear, Tom. I've got a couple of comments for you. First of all, just wanted to

tell Deke that we would like to get this furnace experiment work done about on time and so if he's running a little bit late on the demos, I don't know if he is or not, we'd like him - for him to interrupt that, do the furnace work, and then go back to the demos. Also, we're having - on the UVA experiment that's running now, we've got an indication that either we've got a transducer problem or possibly a problem with the N_2 lamps. And so I've got a change to make for the UVA shutdown that you're going to be doing here in a few minutes. It's on page 10-7 of the Joint Ops Checklist, and that's - those pages - page 10-7, the Joint Ops Checklist. The pages are also located in the back of your Experiments Book.

23 12 32 ACDR Okay. Well, Deke's running late on that foaming. It takes a lot to set all those little things up in zero g, lots more than it did in one g. And I'll tell him about the furnace.

CC-H Yeah - -

ACDR And we'll go look at this Joint Ops Checklist.

CC-H Okay. Yeah, we just wanted for him to - we figured he was running a little bit late, but that's okay. We just wanted to let him know to stop, do the furnace, then go back to it.

23 14 41 ACDR ... Houston. How do you read?

CC-H Loud and clear, Tom.

ACDR Okay. I've got the 10-7. You said there's any mod to it?

CC-H Yeah, it's very minor. What we want you to do is the following, Tom. First, we want you to complete the UVA shutdown there at the top of the page. After the shutdown is complete and prior to doing the UVA stow, what we want you to do is turn the UV ABSORPTION LAMPS and POWER to ON and leave it ON for 30 seconds and then turn the LAMPS OFF and the POWER OFF. And then go ahead with the stow. And this will put some data on the recorder or real time if we happen to have a lockup at that time, and give us some data to look at, see if we've really got a lamps problem or not.

ACDR Okay, let me read that back. At the time, do the top paragraph, UVA shutdown, then turn the UVA POWER and LAMPS ON for 30 seconds, then OFF. Right?

CC-H That's correct. After the shutdown procedure and prior to the stow procedure. Thank you much.

23 15 44 ACDR Real good. Thank you. Deke will knock off on that and start on the furnace checklist.

CC-H Okay. Real fine. And incidentally, we've been watching you guys load P20 and it looks good to us.

ACDR Okay.

23 16 05 CMP Okay. And we're in the maneuver, as you know.

CC-H I'm sorry, Vance. Say again.

CMP We're in the roll maneuver now.

CC-H Roger. As you probably know, we are going to lose ATS LOS here during the maneuver for about 5 minutes, and I'll call you when we get locked back up.

ACDR Okay.

23 17 27 CC-H Apollo, Houston. Just a reminder. It's not printed in the Flight Plan, but the acquisition after we lose comm and get rolled all the way around on the UVA, the acquisition angles up there above for the first acquisition you just made are still good.

CMP Okay.

23 26 49 CC-H Apollo, Houston. We're locked up again through the satellite.

ACDR Real good, Dick. We're about to end roll.

CC-H Okay.

23 27 38 ACDR Dick, if you want me to, I'll call out these steps.

CC-H Okay, Tom. Since I don't have much else to listen to, and it will help us, why don't you?

ACDR Okay. UVA ABSORPTION LAMPS, OFF -

23 27 51 ACDR MARK. UVA POWER, OFF -

23 27 54 ACDR MARK. UVA COVERS, CLOSE -

23 27 57 ACDR MARK it. Barber pole - and gray.

CC-H Okay.

ACDR Now I'll go - I'll go turn the UVA POWER ON and the LAMPS ON for 30 seconds.

CC-H Okay.

23 28 22 ACDR POWER, ON, and LAMPS, ON.

CC-H Okay.

ACDR Stand by. LAMPS, OFF, POWER, OFF -

23 29 09 ACDR MARK it.

CC-H Okay. Thanks very much, Tom.

ACDR Okay. If you're all finished, we're going to wait for a while to drag that cable through. We'll do that later.

CC-H Okay, fine. Thank you very much. We'll take a look at the data and let you know.

ACDR Okay.

23 36 38 ACDR Houston, are you reading our DSKY?

CC-H Negative, Tom. We're dumping data, and so we're not getting live downlink now.

ACDR Okay.

ACDR Vance is doing the P52.

CC-H Okay. We're not getting the data. So when you get it, just read it down to me, please.

ACDR Will do.

ADCR Okay, Dick - -

CC-H Tom, I'm standing by to copy, but you're breaking up. Say again.

ADCR Roger. How do you read now?

CC-H Loud and clear now.

23 38 02 ADCR Okay. Star 02 - star 02, 07; NOUN 05, all zeros; plus 50, minus 81, plus 20; torqued 107 plus 17 plus 17. Over.

CC-H Roger; Tom. Copy. Thank you very much.

23 40 12 CC-H Apollo, Houston for Tom. Tom, for your information, that little test that we ran on the UVA - that you ran for us, verified that that N₂ lamp problem was not a lamp problem but an instrumentation problem. And not only that, when you did it, it resynced the timing in there and fixed the telemetry point. So it worked well and no degradation to the experiment.

ADCR Okay. Real good. Thank you, Dick.

CC-H Roger. Thank you.

23 45 20 CC-H Apollo, Houston. We still don't have data, so we really can't monitor how you're coming along. I just wanted to know how you were doing on the P52 option 1?

CMP Not very well, Dick. You know, we're maneuvering like mad here, and it was a real mistake to make an option 1 while we're maneuvering at this rate. If there wasn't so much light lost in the telescope, it would be no problem. But it takes quite a period of dark adaption to see any stars, and I can't even pick out Rigel yet. So I know I'm off several degrees just due to movement while the thing was posttorquing.

23 46 10 CC-H Okay. What we'd recommend you do then is go ahead, and - we only have about 7 minutes of nighttime left - we'd recommend stopping the maneuver and be sure and get the option 1 because that's most important, and - and then start the maneuver again.

CMP Well, that's not the problem, Dick. It isn't a problem of having to stop the motion; the problem is that while the posttorquing was going on, the spacecraft was moving and the platform was frozen, and auto optics is no help at all now.

CC-H Roger.

CMP I'd suggest we just maybe press on since we only have 7 minutes, and let me go ahead and do the Earth obs, and then maybe the next night pass try to tweak out on a good P52 option 3.

CC-H Okay. Stand - stand by just a second, please.

23 47 22 CC-H Vance, the problem that we have looking at the Flight Plan is we just will not have time to do it during that next night pass because EUV raster scan starts almost right there at darkness itself. And we really want to get the raster scan since we missed the one the other day and - -

CMP Okay. Well, I'll tell you how bad it is. I don't know if this telescope has more light loss than usual. It's not anything to compare with the simulator. And in my whole telescope field of view right now, with the dark adaption I've got, I can see one star.

CC-H Roger.

CMP Oh, I can see two now. I'll try.

CC-H Okay.

ACDR Yeah, Dick. Look at the way they compress things on the timeline here to make sure that one has to follow another. It's really success oriented. And to me, they've just crammed too much into this one period here. Also, this - doing this rate while - rate like this is - what you can see through the telescope is kind of bad.

CMP That works great for an option 3, but it's very poor for an option 1.

CC-H Roger. I understand, and we're talking to see how we can help you out.

23 50 30 CC-H Apollo, Houston. On panel 230, we'd like the UP
TELEMETRY switch to RELAY.

END OF TAPE

Day 201

TAG Tape 201-01/T-59
Time: 201:00:01 to 201:01:30
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

00 01 53 CC-H Apollo, Houston through Orroral Valley on VHF.

00 02 31 CC-H Apollo, Houston through Orroral Valley on VHF.

CMP Roger. Loud and clear, Dick. We're in the middle of this vis obs pass right now.

CC-H Roger. If anyone is free, on panel 230, we'd like the UP TELEMETRY switch to DIRECT.

CMP Okay. Tom's getting that.

ACDR How do you read me, Dick?

CC-H Loud and clear, Tom. How me?

ACDR Okay. Lots better now.

00 03 37 CC-H And, Apollo, Houston. We're not going to have another pass prior to the next Newfoundland or ATS AOS. We want you to do the raster scan per the checklist. And following the raster scan, we'd like to pick up another P52 option 3. And will - we will reconstruct the data after the experiment run.

ACDR Okay. If you can do it that way. We said we'd stay up a little extra in this sleep period - -

00 04 26 CC-H Apollo, Houston. On panel 230 we'd like the UP TELEMETRY switch back to center, UP TELEMETRY. And negative, Tom, we do not want to - we do not want to keep you up after the end of the sleep period.

ACDR Okay.

ACDR UP TELEMETRY, center.

CC-H Thank you.

00 05 00 CC-H Apollo, Houston. We're about to go LOS at Orroral Valley. See you on the ATS.

00 42 21 CC-H Apollo, Houston. Bermuda for 7 minutes.

CMP Roger, Dick.

CC-H And, Apollo, Houston. I was - dropped out on - LOS during the middle of your Earth obs, and I was - just wanted to make sure that you got the message that I had. What we'd like you to do is go ahead and do the EUV raster scan on the times in the checklist. And then after you have maneuvered to the so - to the sleep attitude and still in that night pass, do a P52 option 3. Over.

CMP Okay, Dick. Understand.

CC-H Okay. And then - -

CMP I - I think that will be a good opportunity to do that P52. It may take about 15 minutes of dark adaption before I can do it. And that'll give me enough time.

CC-H Okay, real fine. And then we'll be able to reconstruct the data after you do that option 3. And we don't think we'll have any problems.

CMP Okay. I'm glad to hear that. And the other possibility: I could have put a square search out for that star, but the - for the short time that I had. But the danger is there that if you can't identify it in the telescope, you don't really know that you have the right star ...

CC-H Roger. And stand by, Vance. I'm get - getting another input. Stand by.

00 45 20 CC-H Apollo, Houston. The DAP is not set up correctly. What we need to do is do a VERB 48 and set up the register 1 per the Flight Plan at 61101, even if it delays the raster scan start. And then we'll - -

CMP Okay.

CC-H And then - then we'll - After you do that, then we'll have to trim - I'm sorry. Just do what I told you.

CMP Roger.

ACDR That was 61101. Right, Dick?

CC-H That's affirm, 61101.

00 46 23 CMP Advise - way back, we had to put these phony numbers in the DAP too. You might check them later under NOUN 47, but they're close.

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Page 3

CC-H Okay.

00 47 06 CC-H Apollo, Houston. Your attitude looks good to us now, and we're not too late. We can go ahead and start.

CMP Okay, we'll start right - -

CMP Okay, we ENTERed on the 82720 - -

CC-H Okay. Thank you.

00 47 27 CMP - - on VERB ... 31.

00 48 23 CMP Dick, how long do you want this raster scan to run?

CC-H 6 minutes, Vance. And we're about - you'll get a flashing "37" when it's - when it's done, and you're - and after that, you can go ahead and do the next maneuver. We're about 30 seconds from LOS, and Ascension comes up at 108 plus 40.

CMP Okay.

CC-H And, Vance, one reminder. We'd like you to acquire the ATS as soon as you get in attitude.

00 48 54 CMP Okay.

00 59 53 CC-H Apollo, Houston. Ascension for 4 - for 3 minutes.

01 00 37 CC-H Apollo, Houston. Ascension for a couple of minutes.

ACDR Okay, Dick. Read you loud and clear. And we're maneuvering now to the sleep attitude.

CC-H I didn't quite copy, Tom. I understand that you're now maneuvering to the sleep attitude. When you get in the attitude, we'd like you to get a quick ATS lock and then do the P52. If you should have any problem though, getting the ATS locked up, don't delay the P52 too long because that's what we really want.

ACDR Okay.

CMP Very good.

01 01 55 CMP Houston, Apollo.

CC-H Go ahead, Vance.

CC-H Apollo, Houston. Go ahead.

CMP Hey, Dick. We're about halfway through the night pass, I believe, and this is a very slow maneuver rate. I'm wondering if you wanted us to stop here and do that P52, since it's important, and then continue on. Or - because you know, if we don't get through this until the end of the night pass, we might slip another rev on getting that P52.

CC-H Okay, stand by just a second, Vance.

01 02 35 CC-H Apollo, Houston. Vance, we'd like you to go to the sleep attitude. If you'd like to go to a - at a higher rate, either by doing it manually or - or increasing the rate in the DAP, that's fine with us. We're about 20 seconds from LOS, and we'll see you when you get us locked up on the ATS.

01 02 51 CMP Okay.

01 13 36 CC-H Apollo, Houston. In the blind, we think you ought to be able to acquire the ATS now.

01 14 50 CC-H Apollo, Houston. In the blind, we're seeing some activity on the ATS. We think you ought to be able to acquire it now.

01 20 29 CC-H Apollo, Houston through the satellite. How do you read?

ACDR Loud and clear.

CC-H Roger, Tom. How are you doing?

ACDR Slow.

ACDR Stand by, we'll talk to you in a minute.

CC-H Okay, Tom.

01 21 51 ACDR ..., Bo.

01 23 26 ACDR Houston, Apollo.

CC-H Go ahead, Tom.

ACDR Okay. Vance got it. And - you ready to copy?

CC-H Roger, Tom. We want - we watched you do them, so we have the data. Thanks very much.

ACDR Okay.

CC-H And, Apollo, Houston. We got behind on our uplinks because of all this. And now that you're in P00, we'd like ACCEP'T, and we'll give you - we'll finish them up.

ACDR Stand by. Vance wants to do a check here.

CC-H Okay; fine.

CC-H And, Tom, Houston. When you - when one of you guys get - gets around to it, we'd like somebody to - or like Deke to do the furnace ops that's listed up there at a little after 108 hours.

01 24 27 ACDR Okay, I'll - yeah. This whole thing - they've really jammed this time line on us. Everything is running behind time, and either - one of the three of us will get it. Okay?

CC-H Understand, Tom.

ACDR Okay. You got P00 and ACCEP'T and the star checked.

CC-H Okay; real fine. Thanks much.

DMP Dick, how do you read?

CC-H Loud and clear, Deke.

DMP Okay. I finished the demos, and I was supposed to give you some data on - on the foaming one - the color or liquid crystals. Ready to log it on page 1-71 in the Experiments Checklist?

CC-H Stand by. Just a second, please.

DMP Okay.

01 25 52 CC-H Okay, Deke. Go ahead.

DMP Okay. Number 1 is a dark blue.

CC-H Okay.

DMP Number 2 is green.

CC-H Okay.

DMP It is a green green. Number 3 is a dark green.

CC-H Okay.

DMP And number 4 is a kind of a dark reddish brown.

CC-H Okay. Real quickly: 1 is dark blue, 2 is green, 3 is dark green, 4 is a dark reddish brown.

DMP That's affirm.

01 26 28 CC-H Thanks a lot, Deke.

DMP Right. Our old bathroom up there is also all blue-red at this point.

01 26 59 CC-H Deke, Houston. You broke up on that last transmission. If it was important, say again, please.

DMP It really wasn't. I was just commenting that we had a lot of blue and red dyes associated with those experiments, and our bathroom up there has been repainted with them.

CC-H I see. Okay. Copy.

01 27 58 CC-H Apollo, Houston. Two things, one on configuration on panel 400, the VTR. We would like the VTR POWER to ON and TELEMETRY POWER to ON so we can do the dumps tonight. Also, if you guys would like to activate the - to turn on the secondary coolant loop pump and activate the - the evaporator here for a few minutes before sleep time, you could get a few minutes worth of extra cooling. And I'll call you at our last pass tonight, which is Guam, and get you to turn it off.

01 28 56 CMP Houston, Apollo.

CC-H Go ahead, Vance.

CMP Okay. We've got the water boiler running and advise that it looked like that star was only or - the stars were only a couple of degrees away from where they should be. But after about 10 minutes of dark adaption, I could see the first two that I got, and the third one that I checked on, I could only see in the sextant. So that's just to give you an idea of the problem on how we have to depend on auto optics with this particular light loss.

CC-H Roger, Vance. Copy. Just at about the time - and incidentally, Vance, you were just about coming into li - into daylight at about the time you were working on that last star, so I'm sure it was even - even harder. And we're sorry for all the confusion and the crowding on this, but in the end it worked out real fine. Thank you very much.

01 29 59 CMP Okay. Glad if it all worked out.

END OF TAPE

Day 201

TAG Tape 201-02/T-60
Time: 201:01:30 to 201:02:27
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

01 30 16 ACDR Okay, Dick. The old crystal growth has been activated, and we'll go to work on your furnace.

 CC-H Okay. Real fine.

 CC-H Apollo, Houston. One other comment. The MCC-Moscow overheard our conversation about the - about the VHF in the morning. It turns out that the first couple of hours after you're up, they're going to be very busy, and they requested that we not turn the VHF FM on until 119 hours. I've made a note in my checklist down here, so that you don't have to. And at that time, I'll give you a call; and after that time, you can turn it on and leave it on for the rest of the time.

 CMP Okay. Very good. We'll have it off, and just wait until you let us know.

 CC-H Okay.

01 32 34 CC-H Apollo, Houston. We got about 5 minutes left in this ATS pass. EECOM has been noticing for the last several minutes that the O₂ flow is high, and we were not sure what the cause of it was and wanted to check.

 CMP Okay. Well, we were just using our waste management system, I think, Dick.

 CC-H Okay. I understand.

 CMP In - in conjunction with the purge.

01 34 05 CC-H Apollo, Houston. A while ago, I read up a change to Vance to delete the waste stowage vent purge this evening. So, we'd like to - I thought I'd got that up; sorry about that - and we'd like to get the purge terminated.

 CMP Sorry, we were all off the line. Please repeat.

CC-H Oh, okay, Vance. We were a little confused about your last comment about the purge, because that was what I'd read up to you, oh, an hour or so ago to delete in the Flight Plan. If the purge is going on, we'd like to get it terminated.

CMP Okay. Stand by 1.

CC-H Okay. And - -

CMP Right. Okay. Right. Agreed.

01 34 53 CC-H Roger. Okay. In the presleep checklist, there's a couple of things. Any time you can give us a VERB 74, we'd appreciate it. Also, we're - also, we need a readout on the battery volts. And, also, tonight, the G&C would like a readout on the RCS quad percentage quantities.

CMP Okay. I can give you all those things right now. If you're ready for the VERB 74, I'll send it.

CC-H That's affirm, Vance. We're ready.

01 35 31 CMP Okay. It's in. Okay, other things: BAT C, 37 volts.

CC-H Okay.

CMP BAT A, 32; BAT C, 37; pyro BAT A, 36.9; pyro BAT B, 37 volts. And now for the quads.

CC-H Roger, Vance. And we're a couple of minutes from ATS LOS. We'll see you at Guam, so keep on reading, please.

CMP Roger. Okay. Quad A, 76; quad B, 92-1/2.

CC-H Okay.

CMP Quad C, 82-1/2.

CC-H Okay.

CMP Quad D, 89.

CC-H Okay, and, also, we need the PSM, please.

CMP Roger. 14-1/2.

CC-H Okay. Fine. I got them all. And Guam comes up in 5 minutes. I'll call you there.

01 36 52 CMP Okay, Dick.

01 42 13 CC-H Apollo, Houston through Guam for about 6 minutes.

CMP Roger. Loud and clear.

CC-H Roger. And, Vance, this is the 1a - I have a feeling that you guys are running late and - and - may be up for a little while; but, at any rate, this is our last scheduled pass for this evening, and I've got several items that I wanted to pass up to you just - that I need to get up. And if I can get them up here, we won't have to use another pass.

CMP Okay, fine. Go right ahead. I think we'll be - we're getting in pretty good shape here.

CC-H Okay. One thing, somebody might be getting out the Updates Book because I've got a change to - a couple of T_{ig} times in there for the block data. And you can let me know when you've got that in hand. We want to load the DAP register 1 for the Flight Plan at 6 plus four 1's; 61111. After that, we want to do - PRO through the VERB 49 to trim the sleep attitude and make sure plus the sleep - presleep checklist, that the optics are zero and the power off.

01 43 39 CMP Roger, Dick. We've got the DAP loaded. And what would you like in VERB 47 - or NOUN 47?

CC-H Excuse me, you may have misunderstand [sic] me. We just wanted you to trim up the sleep attitude by going through VERB - doing a VERB 49 trim maneuver.

CMP Roger; I understand. NOUN 47 is inaccurate. Sometime, we'll have to get an update from you. But that can wait.

CC-H Okay, good. Yeah, we'll - I will.

CMP Okay.

CC-H One other thing I forgot to tell you a while ago. The computer is yours, and you can go to BLOCK.

01 44 21 CMP Okay. BLOCK.

CC-H Okay, another thing is, here at Guam, we want to be sure and get the secondary coolant loop turned down, so we want to deactivate the evaporator and turn the pump off.

CMP Okay, that's in work.

CC-H Okay. The - you have - we've loaded up you a new lift-off time, so we'd like you to sync the mission timer.

01 44 50 CMP Okay. We'll sync that with NOUN 65.

CC-H Okay, and stand by just a second.

01 45 01 CC-H Apollo, Houston. We'd like you to keep the secondary coola - coolant loop pump on until you've deactivated the evaporator and then the pump off.

CMP Okay.

CMP We've been bit a few times on leaving that on too long, so I guess we were getting spring loaded.

CC-H Roger. I don't know, I'm assuming you've - we can't tell for sure by our data, but we want to make sure that we get the purge terminated also. We can't tell.

CMP It's terminated - already.

01 45 42 CC-H Okay, real fine. And tomorrow morning's wake-up time is the nominal one. It's at Vanguard at 117 hours and 30 minutes, and I'll be calling you there.

CMP Okay, and just repeat the first item you had. I didn't get that one. I didn't note that one.

CC-H I think - I mentioned that I've got a T_{ig} update in the Updates Book, that I need to do to two of your block data pads, and the second thing, I think I mentioned, was the - was changing the DAP, which you've done.

DMP Okay, yeah, it was the updates thing that I knew we missed.

CC-H Yeah, if you could - we've still got about 2 minutes here if you can find the Updates Book, and I need to update the T_{ig} time on rev 78 and rev 93.

01 47 00 CMP Okay. Go ahead, Dick.

CC-H Okay. The rev 78 T_{ig} time should be 129:36:34. And the - -

CMP Okay. Go ahead.

CC-H Okay. And the rev 93 T_{ig} time should be 153:18:39.

USA Roger. Update to 78 T_{ig} time 129:36:34; 93 is 153:18:39.

CC-H Okay. Stand by just a second.

CC-H And, Vance, one more thing. The high-gain angles for tonight are a pitch of minus 48 and a yaw of 258, and we need to set those.

01 48 00 CMP Okay. That's in work.

CC-H Okay. And we're satisfied with the evaporator now. We'd like the SECONDARY COOLANT LOOP PUMP, OFF. Incidentally, we're about 20 seconds from LOS. I'm going to be standing here - standing by here on these upcoming next couple STDN passes and also on ATS, and I've got some news here that I haven't had time to read to you tonight. If you'd like to hear it or talk about anything else, just give me a call when we get locked up per the Flight Plan.

CC-H And if I don't hear from you, have a good night's sleep, and we'll see you in the morning.

CMP Okay. Ordinarily, we'd like news, but we still have some work, so maybe we'd better get at it and see you in the morning. Thank you.

CC-H Okay, great. I'll still be here, so I'll - I'll be - I'll have it in the morning. See you then.

CMP Great.

CMP And Deke says to tell you he's gone through ...

01 49 08 CC-H I'm sorry; you cut out. If you're still there, say again.

02 17 08 CC-H Apollo, Houston.

02 18 00 CC-H Apollo, Houston. If you read, no acknowledgment necessary, but we need REACQ and NARROW on panel 230 for the high gain so we can use it tonight. I'm sorry, on panel 3.

CC-H Apollo - Apollo, Houston.

02 19 18 CC-H Apollo, Houston in the blind. On panel 230, we need REACQ and NARROW.

02 19 51 CC-H Thank you much, Apollo. We're going over the hill at Bermuda.

02 24 08 CC-H Apollo, Houston. One of the things that I forgot to verify this evening, I believe, was to make sure that the speaker box was on so we have comm if we need it all night. We'd appreciate knowing that it is.

END OF TAPE

Day 201

TAG Tape 201-03/T-61
Time: 201:02:27 to 201:02:45
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

REST PERIOD - NO COMMUNICATIONS

Day 201

TAG Tape 201-04/T-62

Time: 201:09:21 to 201:10:30

Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

09 54 08 CC-H (Music)

09 56 27 CC-H Good morning, Apollo. We're AOS through the Vanguard. We've got you for about 3 more minutes.

CC-H Apollo, Houston. We need to get the VTR POWER and TELEMETRY and INTERLEAVER switch on panel 400 ON to allow us to dump some recordings. If you could get that for us, please, we would appreciate it. That's contrary to what you will be reading in your Flight Plan if you've taken a look at it. We want the VTR POWER, TELEMETRY POWER, and INTERLEAVER all ON.

CC-H Apollo, Houston. We are a couple of minutes from LOS. Our next station contact will be through the ATS at 117:53. We have a scheduled waste water dump at that particular period that we would like to delete. And assuming that we're - you're probably going to have some problems with the Soviets using your VHF AM on Alfa, we would like you to select VHF Bravo - Bravo SIMPLEX - Bravo.

09 58 20 CMP Okay. SIMPLEX Bravo. Good morning, Crip.

CC-H Good morning, Vance. You sure sound all bright-eyed and bushy-tailed there.

09 58 33 CMP And, hey, we've got your INTERLEAVER and all that. And we want to go to VHF Alfa.

CC-H We assume we're Alfa now and we'd like to go to SIMPLEX Bravo.

09 58 44 CMP Okay. SIMPLEX Bravo.

CMP And, let's see, that means SIMPLEX Alfa should be OFF.

CC-H I'm sorry.

CC-H SIMPLEX Alfa should be OFF. Okay. Alfa's OFF and Bravo's ON.

CMP Okay. Hey, nice music there this morning.

CC-H Okay. Glad you enjoyed it. That's what you missed yesterday. Also, we show that the VHF RANGING is ON, and left over from yesterday. If you'd secure that for us, we'd appreciate it.

09 59 23 CMP Okay. It's secured.

CC-H Sorry to wake you up and have you start throwing switches all around like that. Maybe we'll relax a little bit here later.

CMP There's no problem. We're sort of used to throwing switches by now.

CC-H Roger. Going over the hill.

09 59 44 CMP Okay.

10 21 56 CC-H Apollo, Houston. We're AOS through the ATS. We have you for 43 minutes.

DMP Okay, Crip. Read you 5 by. How you reading us?

CC-H Loud and clear, Deke. How are you this morning?

DMP Just fine. Seemed like kind of a short one, but mighty fine.

CC-H Well, we're looking forward to getting - getting lots of good experimental data here.

DMP You bet. How's everybody down there today?

CC-H All bright-eyed and bushy-tailed.

DMP Outstanding.

CC-H You guys did a super job during that joint phase.

DMP Well, thank you. A lot of people did a good job on that ...

CC-H One item I could use this morning, if anybody's handy to do it, is to get the POTABLE INLET valve opened up.

DMP POTABLE INLET valve opened. Okay, we'll do that in a second.

Day 201

TAG Tape 201-04/T-62
Page 3

10 24 17 CC-H

Apollo, Houston. If we could have ACCEPT, please, we're going to uplink to you coming up on this Ascension pass and also we're going to be dumping our VTRs, so we're going to lose voice here with you for a few minutes. I'll give you a call when we lock it back up. There is no update on the time for your mapping pads on this upcoming pass.

10 29 29 CC-H

Apollo, Houston. We're talking at you now through Ascension. We've got you for about 3 and 1/2 minutes.

END OF TAPE

Day 201

TAG Tape 201-05/T-63
Time: 201:10:30 to 201:12:00
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

10 30 51 CC-H Apollo, Houston. We're a couple of minutes from LOS through Ascension here. The computer belongs to you once more, so you can go back to BLOCK and we'll drop out. And we're going to terminate this VTR dump so we'll have voice across Africa. And, for your information, the weather's looking good across there. You're probably going to have little problems with the Guinea Current due to clouds, but it looks great across the desert.

10 34 42 CC-H Apollo, Houston. We're AOS through the ATS. We'll be talking with you across Africa here.

10 35 17 CMP Roger, Crip.

CC-H Rog. We're just going to be sitting here listening to you as you go across.

10 35 25 CMP Okay.

10 49 44 CC-H Apollo, Houston. We'll be losing you shortly here on the ATS. Our next station contact will be through the Vanguard at 119:04 - 119:04. And that's about 36 minutes away. We'll try to get your morning report there. How did - how did the pass go, coming across Africa?

10 50 05 CMP Man! It was swift. A lot to see. I had clouds up almost to Lake Chad, and then right over the Lake Chad area. Had - scattered to broken. So it was poor for - for photography. But from then on, it was wide open. Got a lot of pictures. And, of course, I got a good view of - Cairo area, Levantine Rift. We'll be talking into the tape recorder now. And - as I said - have a lot of photos.

CC-H Very good, Vance. Thank you.

10 50 43 DMP As far as the mapping part's concerned, Dick [sic], we're doing it out of window 5. And that window is obviously considerably colder than number 1. And we have a continual problem with that window fogging over on us.

CC-H Copy that. It's fogged up pretty good.

DMP Well, I've got it wiped down. The problem is that it keeps fogging, and you just have to keep wiping it.

CC-H Copy.

10 51 12 CC-H See you at Vanguard.

10 51 15 DMP Okay.

11 25 26 CC-H Apollo, Houston. We are AOS through Vanguard for 7 minutes.

USA Okay, Crip.

11 25 57 CC-H Apollo, Houston. If you read, I - got a couple items I need to update you on, on this morning's activities.

CMP Go ahead, Crip. How do you read, Crip?

CC-H Okay. Loud and clear, Vance. One item: I think you guys had talked about turning on your VHF FM so you could talk to your buddies if you wanted to, and you've got a GO on going ahead and doing that, if you'd like.

CMP Okay, real good. Right now, we're too busy to do it, but we'll do it first chance we get - -

CC-H Okay. Fine.

CMP - - just for our own benefit.

CC-H Okeydoke. Vance, do you have a coup - time to make a couple of small mods in your time line for this morning?

CMP All right.

CC-H You can pull out the book there, on - talking about 1 - oh, about 119:35 is the first one.

CMP Okay. Go.

CC-H Okay. We want to - to delete that helium injection you have there and move it over under Deke's column, at 120:10. And that's due to getting it in a little bit late last night.

11 27 05 CMP Okay. Stand by 1 and we'll copy it.

11 27 43 CMP Okay; next.

CC-H Okay, fine. And assuming we've got it moved over, what we want you to do at that time, at 119:35 where you did have the helium inject, we saw a little problem with the X-ray when we were doing that EUV raster scan yesterday and we want to do a purge on it. Actually - and we have checked the attitude at the - that you're at there and everything's okay. You can actually go to the book and do it or it's only three steps we really need, and I can give those to you if you want to write them in now.

CMP Okay. I'll write them.

CC-H Okay. At 119:35, we want X-RAY COVER, OPEN.

CMP Go.

CC-H Okay. X-RAY LOW-VOLTAGE POWER, ON.

CMP Go ahead.

CC-H And X-RAY PURGE, START. And that's really all you need to do. You'll pick up everything else when you're - you're doing the cal, you can - which is called for next in your activities. You'll find out later when you pull out the EUV pad, you'll be following this activity with a cal and if you do that on time, everything will work out hunky-dory.

CMP Okay. Very good.

11 29 01 CC-H Okay. One item is that - and I'll try to give you a call to remind you at - when we get AOS through the ATS but - but prior to doing this activity, we're going to have you shut down the primary evaporator - or deactivate the primary evaporator early so it won't get involved or won't be on when we're doing this - this purge.

CMP Okay. Understand.

CC-H Okay. We've got about 3 more minutes left through this pass, and either now or a little bit later, whenever it's convenient, we can - can get the

morning report in. Incidentally, for the upcoming mapping pass, there are no - not - no time updates, so you can start those nominal time.

CMP Okay. We're having a real hard time getting breakfast here, Crip. Could we delay this morning report - -

CC-H Okay, yeah.

CMP - - for you for a while?

11 29 48 CC-H We'll delay it. No sweat. Incidentally, we show the urine dump port as still active and, of course, we'd like to get that secured before we also get into - get into doing this pass.

11 30 00 CMP Okay. We've been venting it. I'll close it now.

11 31 55 CC-H Apollo, Houston. We are 1 minute from LOS. Next station contact will be through the ATS at 119:26. See you there.

11 32 03 DMP Okay.

11 57 15 CC-H Apollo, Houston. On panel 230, UP TELEMETRY to RELAY, UP TELEMETRY to RELAY; in the blind.

11 59 59 CC-H Apollo, Houston. We're AOS through Ascension. We're talking at you for about 6 minutes.

12 00 18 CC-H Apollo, Houston. I'm going to have to give you a time update for this EUV rev 72 pass we got, if you can get your Flight Plan Supplement out.

END OF TAPE

Day 201

TAG Tape 201-06/T-64
Time: 201:12:00 to 201:13:30
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

12 00 43 CC-H Apollo, Houston. How do you read?

12 01 13 CC-H Apollo, Houston. How do you read through Ascension?

ACDR ..., Crip. A double echo.

CC-H Good morning. I have a - an update to your EUV rev 72 pad, if you want to pull out your Flight Plan Supplement.

12 02 04 CMP Go ahead, Crip. Go ahead, Crip.

CMP Houston, how do you read?

CC-H Apollo, Houston. Read you loud and clear. How me?

CMP With a lot of echoes, but go ahead with your EUV.

CC-H Okay, Vance. Sunset time will be 120:14:33. And I'm assuming you've initiated the purge. Did you get the PRIMARY EVAP secured for us - or deactivated?

12 03 57 CMP The echoes are making it bad. Please repeat.

CC-H We copy your - drifting - out attitude. You want to give us a VERB 58 to get back in, please?

ACDR Crip, you've got about four echos, and are completely unreadable.

CMP Crip, the one thing I did get is that the - we are now counting up to 120:14:33 instead of 120:14:16. Is that affirm?

CC-H That is affirmative - affirmative.

CC-H Apollo, Houston. How do you read now?

ACDR There you go; lots better.

12 04 01 CC-H Okay. We had a double comm configuration at you for a moment. We need to verify that the PRIMARY EVAPO-RATOR is secured, and we also need a VERB 58 to - because we're drifting out of attitude here.

12 07 34 CMP Houston, Apollo.

CC-H Go ahead.

CMP Okay. Do you - on the EUV pad, at 35, do you still want an X ray cal, for background?

CC-H That's affirmative.

CMP Okay.

CC-H And we're watching you - from here -

12 11 14 CMP Okay, Crip. We have a GO for the cal?

CC-H That's affirmative - that's affirmative.

CMP Okay.

12 13 45 CMP Cal procedure's complete, Crip.

CC-H Rog. And - a little bit of good information for you, here. That EUV raster scan we did yesterday. We came off with 0.3 of a degree pointing error, which is great. And - so, we won't have to go through and try to do any updates on all those EUV pads. I know you guys have some - we still show the OPTICS, ON - you can secure that. ... you got your P52 out of the road, and, whenever we get a chance, we'll take that data here.

CMP Okay.

12 15 30 CMP Okay, Crip. Here's the P52.

CC-H Okay. Give it to me.

CMP Stars 4 and 14. We had to make a 90-degree roll to find stars from that attitude. NOUN 05, all balls; NOUN 93, plus 00.106, minus 00.093, minus 00.004. I mean - say that one again; Z, minus four balls 5; GET, 119:16:25.

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Page 3

12 16 10 CC-H Okay. We got all that and we'll - going to lose you here, and we'll see you at Guam at 1 - 120:19. And that's about 25 minutes away.

12 25 35 CC-H Apollo, Houston. We terminated our VTR dump, so we're back with you through the ATS. And we have you for about 10 more minutes.

DMP Say again, Houston.

CC-H Just telling you that we had terminated our VTR dump. Consequently, I could talk to you again, or you can talk to me, whichever way we desire to go. And we've got you for about 10 minutes.

DMP Okay. Well, we're still trying to get regrouped here, after that last Earth obs. So - some of us starting breakfast, and some trying to finish.

CC-H Okay. Understand. Getting up and getting that pass off early there kind of complicates the morning. But we're with you. We're still standing by for the morning status report any time it's convenient for somebody to give it to us. Also, we'd like to get a reading off of the quad Alfa propellant, any time somebody could. We've - we've had a discrepancy between our reading and yours. We think yours is correct and ours has just got a bias on it.

CC-H Y'all can work those in at your leisure.

DMP Okay. Tom's coming back on the air, here. Let me get ...

ACDR Okay, Crip. How do you read me?

CC-H Loud and clear, Tom. How me?

12 26 50 ACDR Loud and clear. What do you - Okay. I got quad Alfa propellant quantity - we're reading about 85-1/2 percent.

CC-H Okay. Real fine. Thank you very much.

ACDR Okay. For my menu yesterday. For breakfast - I didn't have the coffee. I ... take those wonderful vitamins. And I had tea with su - with sugar and lemon. For lunch - I didn't eat the soup or the

coffee, but I added tea with sugar and lemon. For dinner - I had everything but the vanilla pudding; added a strawberry drink and tea with sugar and lemon. PRD today reads: 11007; 7 hours of good sleep, no medication.

CC-H, Tom.

ACDR Go ahead.

CC-H Roger. We copied all that. Standing by for the CP's.

ACDR Okay.

12 28 54 ACDR Okay. Here we go, for Vance. He had two breakfast rolls instead of one. Knock out the spice cereal. For lunch - everything. For dinner - no fruit cocktail, but added in a cocoa. Okay; 7 hours of good sleep; PRD reading 48182. No - no medication.

ACDR Okay.

ACDR Okay; Deke ate everything on his menu, plus strawberry. His reading is 61006; 7 hours, good sleep; 30 gulps. And we got to get busy. Talk to you later.

CC-H Okeydoke.

12 33 57 DMP Houston, Apollo.

CC-H Go ahead.

12 34 00 DMP Okay, Crip. I got the helium inject done. The temperature is 549.

CC-H Okay, Deke. Thank you very much.

CC-H Apollo, Houston. We're going to lose you here, shortly, and in your maneuvers - and we'll have you again at Guam in 7 minutes.

12 34 39 USA Roger.

12 36 06 ACDR Crip, do you read us?

CC-H That's affirmative.

ACDR Do you want us to go to HIGH BIT RATE, FORWARD, COMMAND, and RESET?

CC-H That's affirmative.

CC-H And we'll lose you when you go do that.

12 36 22 CC-H Okay, and also we'd like to verify that - the GLYCOL EVAPORATOR WATERFLOW ...

12 42 11 CC-H Apollo, Houston. We're AOS through Guam for 6 minutes.

ACDR Roger.

12 46 07 CC-H Apollo, Houston. I don't know whether you got my last call regarding it, but on the GLYCOL EVAPORATOR WATER FLOW valve - we need to make sure that's in the OFF position - center, OFF.

CC-H The reason for that is that we're - our data looks a little bit funny down here now.

12 46 29 ACDR Okay. We had the switch in the wrong position. Because of the position here, it's hard to tell whether it's center OFF or ON.

CC-H Rog. Did you have it in the ON position?

ACDR Yeah. Sorry.

CC-H Okay, fine. Thank you.

12 47 05 CC-H Apollo, Houston. We're 1 minute from LOS. Next station contact through Santiago in 32 minutes at 120:57 - 120:57.

12 47 16 ACDR Okay.

13 21 15 CC-H Apollo, Houston. We're locked up through Santiago, and we should be with you for about 57 minutes.

DMP Roger.

CC-H Apollo, Houston. If somebody's got a moment, we'd like to verify a switch position on panel 230.

CMP Okay. Stand by.

CMP Okay. What is it, Crip?

CC-H Okay. Down in the lower right-hand corner there on the - under RELAY MODE CONTROL, the TV REALTIME/PLAYBACK. Can you tell us where that is?

CMP Just a minute.

CMP Or UP TLM, rather.

CC-H Sorry, Vance. Say again, please.

13 24 02 CMP Roger. The REALTIME/PLAYBACK switch is in UP TLM position - middle position.

CC-H Okay. Fine. And we have drifted out of attitude, we noticed, and somebody's going to have to give us a VERB 58.

13 29 15 CC-H Apollo, Houston. When somebody gets a chance, I have the new pad time for rev 73, and also we got a switch verification again we're going to need to do, but no big hurry on either.

CMP Okay, ready.

CC-H Okay. If you want to copy that time down, Vance, it's for rev 73. And understand you are ready to copy?

CMP That's right, Crip.

CC-H Okay. It's 121:43:27; 14 - 121:43:27.

13 29 51 CMP Okay. Got it.

END OF TAPE

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

13 29 55 CC-H Okay. And that switch - we're going to need to make sure it's in the right position for a couple of little TV things that we've got. On 181, we need to verify that the CM/DM POWER switch is ON.

CMP Okay.

13 30 34 CMP Okay. That switch is OFF, Crip.

CC-H Understand it was OFF? If it was, we need - we need to turn it ON.

13 30 44 CMP Okay, coming ON.

CC-H Okay. And we're just going to leave that switch ON now.

CMP Roger.

13 35 27 CMP Crip, are you there?

CC-H That's affirm, Vance. Go ahead.

CMP In line with our recent policy, I'd like to activate the secondary loop for a little while, evaporator 2, if that's okay.

CC-H Stand by 1 on that, Vance.

CC-H Vance, we - we think we've got a problem - that little switch problem we had earlier on the primary loop. We believe we've got water in there and it's cold and we think - we think we're going to freeze it up. So we'd like you to stand by on that. We're getting ready here, we believe, to scrub the rev 74 pass so that we can roll the thing over and execute the ECS/SSR-2 procedure, which is to thaw that vent out.

CMP Understand.

CC-H And I'll - I'll get with you a little bit more information on that shortly.

13 36 31 CMP Okay.

13 53 03 CMP Houston, Apollo.

 CC-H Go ahead.

13 53 07 CMP Okay; we're maneuvering.

 CC-H Copy.

 CMP VERB 49.

 CC-H Okay, fine. Vance, for your information, we were looking at the small mound of data when we came through Madrid. We're dumping now so we're not - we're dumping DSE so we're not looking at real-time data. Consequently, we're still trying to ponder whether you're - whether that loop was actually frozen up, and - But right now we're thinking we can press on; because it looked like from the blurb of data that we got that it was working properly.

 CMP Okay. It looks to me like the primary loop is working properly. But I'm wondering about the capability of the secondary right now. I could try to turn it on real quick and see for you, if you wish. I - when we talked before, we started to turn it on just for a moment. It didn't look like it was going to work normal, and turned it right off.

13 54 09 CC-H Okay. I think, per our agreement on operating these experiments, we should not have the - either of the evaporators on at this time. So I think we'd better hold up on that if that's okay.

 CMP Okay. Well, right now the status of the primary is that it's operating; and it looks like it's operating in a normal range, although it's got the glycol evap temperature down to about 39 or 40. We can turn it off right now.

 CC-H Okay. Yeah, we had assumed that you guys had already deactivated that. That was called out at 25.

 CMP Okay. We were - -

 CC-H Before you secure - -

 CMP - - hesitating to touch - we were hesitating to touch it, simply because we knew we might have to roll around and unfreeze it.

CC-H Okay. Why don't you go ahead and give up the steam pressure and - -

13 55 01 CMP Okay. Steam pressure is 0.12 on the primary system and the glycol evap temperature's down to about 38. And, of course, the secondary coolant loop is on. We're holding to turn it off until we hear from you right now.

13 56 11 ACDR Okay, Crip. Do you read us?

CC-H I'm sorry. Say again, Tom.

ACDR Roger. Do you want us to turn that evap off now?

CC-H Stand by.

ACDR Or do you want to look at the data some more?

13 56 23 CC-H That's affirmative. We want to go ahead and deactivate it.

ACDR All right. Turn it off.

CMP Houston, Apollo.

CC-H Go ahead.

13 57 47 CMP Okay. We've deactivated it. And Tom's still got his thumb on the INCREASE switch. But it looks like the steam pressure is not going above about 0.17 or 0.18.

CC-H Copy that.

CMP Glycol evap temperatures are at 46 right now.

CC-H I'm - I'm advised that that's a satisfactory reading - that you're reading the vapor pressure right now.

CMP Okay. Good.

ACDR Okay. You want us to press on with the next one?

CC-H Yes, sir.

14 05 18 CC-H Apollo, Houston. We got a small problem on the X-RAY HIGH POWER down on panel 230. We'd like you to take it OFF, and then go to 2, if you would. Somebody can get it for us.

14 05 30 CMP Understand.

CC-H Okay - -

CM Hold it. What HIGH VOLTAGE POWER to 2?

CC-H We want you to delay in OFF for 5 seconds.

14 06 12 CC-H Apollo, Houston in the blind. On the HIGH GAIN ANTENNA, would you go to NARROW and REACQ, please - NARROW and REACQ.

CC-H Apollo, Houston. We're locked back up with you. We dropped out there awhile.

14 08 32 CC-H Apollo, Houston. We see you're a little bit behind on the pad there. Recommend you go to the 3 plus 30 DET time and go ahead and proceed with that one.

ACDR Crip, how do you read?

CC-H Loud and clear. How me?

CC-H Apollo, Houston. Read you loud and clear.

14 11 33 CC-H Apollo, Houston. We're back with you. How do you read?

14 14 13 CC-H Apollo, Houston in the blind. If you read, we would like you to perform an X-ray powerdown; X-ray powerdown. The data is not looking good to us.

14 15 17 ACDR Crip, how do you read?

14 15 19 CC-H Loud and clear. How me?

14 15 23 ACDR Crip, how do you read?

CC-H Loud and clear, Tom. How me?

CC-H Apollo, Houston in the blind. We're going LOS from the ATS. We'll see you at Orroral in 9 minutes.

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14 17 50 CC-H ... and x-ray powerdown.

14 26 37 CC-H Apollo, Houston. We're AOS through Orroral. Talking to you for 2 minutes. And we need the X-ray power-down performed, please. The data on that instrument is not normal.

14 26 48 ACDR X-ray power down. Okay.

CC-H And no need to acknowledge. We were getting downlinks to you on the ATS awhile ago. We had an up-link problem. Apparently we were locked on a side-lobe, or something at you, but we got good downlink.

ACDR Okay. You want the X-ray powerdown now?

CC-H That's affirmative.

14 28 08 DMP Okay. X-ray's powered down, Crip.

CC-H Okay, Deke. Thank you.

CC-H Okay. We're about 30 seconds from LOS, and our next station contact is through the ATS at 122:40, about 34 minutes away.

14 28 33 DMP Okay.

14 58 19 CC-H Apollo, Houston. We're here with you very briefly through Quito.

ACDR How do you read, Houston?

CC-H We're reading you clear but scratchy.

ACDR Okay. Look, get with Farouk. This attitude for visual obs - ... was okay but we - there's no room to get your head around or look upside down and *** just makes everything about twice as easy.

14 58 58 CC-H Tom, if you're still reading, we're breaking up. I'll get your comment when we get - get in the ATS contact.

END OF TAPE

Day 201

TAG Tape 201-08/T-66
Time: 201:15:00 to 201:16:30
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ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

15 02 59 CC-H Apollo, Houston in the blind. Panel 230, we need UP TELEMETRY to RELAY, please.

CC-H Apollo, Houston in the blind. Panel 230, we need UP TELEMETRY switch to RELAY, please.

ACDR Houston, Apollo. Do you read?

CC-H Apollo, Houston. Reading you loud and clear now, Tom.

ACDR Okay. Did you get my last transmission?

CC-H Negative. I understood that you were having some kind of problem with your vis obs attitude in the window, and I'd like to get that again, if I could.

15 04 14 ACDR Okay. Look, I'm sure this was optimized because sometimes you do the vis obs at the mapping appi - attitude. I'm now wings level. There - I've gotten a lot of cloud cover, of course, so I can't see much, so I'm not losing too much by talking to you. What we want to do is to - to - on my - just the vis obs only to roll to heads up. Because if we could sit down behind the couch, this attitude wouldn't be bad. But the trouble is, there's not enough room to sit down behind the couch and look out where you're going. You can't get in there. You're too high. So we want to roll to heads up, pitch down, looking straight forward for the vis obs attitude when it's not associated with the mapping. Can you get Farouk and his troops tracking on that? Over.

CC-H Okay, Tom. I think we understand that, and we'll - we'll take a look at it for the upcoming passes.

ACDR Yeah, this heads down; when you look out like that to get the view, you're - you're straining yourself up against the instrument panel, holding your feet in the struts against the tunnel, and everything in the book is left and right. Well, you can overcome that, but you just can't get the lead-in. I tried sitting upside down on the couch, but the only way you can see it out is through the other side of the window. It's really a hell of an awkward situation.

So we want to pitch down at least 30 or 40 degrees, nose down, and we'll take everything coming head on for the vis obs wings level. Over.

CC-H Okay. If I'm understanding, you're talking about wings level, heads up, pitch down, about 30 to 40 degrees. Is that correct?

ACDR Yeah, at least. Whatever it takes to get that window out good instead of this heads down.

15 05 48 ACDR The mapping passes we'll have to leave like they are. We understand that, but when he includes mapping with vis obs, there's nothing we can do about that. But as far as just pure vis obs by itself, we want heads up, pitch down to a degree. He should be able to determine that. I'm going to say - oh, at least pitch down about 30 - 30 - 30 degrees - 40 degrees.

CC-H Okay. Fine, Tom. And just to make sure that we do understand that, we're talking about with docking module forward. Is that correct?

ACDR Oh, yeah. Docking module forward, pitch down.

CC-H Okay.

ACDR Looking out window 3.

CC-H Rog to that.

15 06 30 CC-H Okay, when somebody gets a chance; on that panel 230, we can go ahead and go back to UP TELEMETRY on the switch.

15 11 30 CC-H Apollo, Houston, for the AC. Tom, when you get a moment there, you can talk a little bit, we'd like a few clarifications on that attitude that you were requesting.

ACDR No, just before - Hang on. I got a target here.

CC-H Go ahead. No problem, we can just get you whenever you've got some time to talk.

ACDR Okay, Crip. Back with you.

CC-H Okay, Tom. One of the things we want to clarify - We're assuming that you want to be with your back to the couch. Is that correct?

15 14 25 ACDR Yeah, well, it gives your back - with my back to the couch now, looking forward. And again - No, you - you can do it, but it just seems easier if you're heads up on it looking down forward. Of course, I guess you don't get the high-gain antenna, so that's something to play off.

CC-H Yeah, we're going to have to look at the high-gain antenna. One other item. Have you got any real preference as to whether the objects are moving from the top of the window down or from the bottom of the window up?

ACDR No, I don't think so. You talking retrograde?

CC-H That's affirm.

ACDR No. I think it's easier when you get a lead into it coming forward.

CC-H I'm sorry. I didn't quite get all that. You said a lead into it, which you prefer coming from the top of the window down, then?

15 15 16 ACDR Well, like for right now, yeah, I've been coming from the top of the window down, as they're going forward here. Let's - let's just go ahead and see what we've got here for a while. Sometime later on, as we get an opportunity where it's not coupled into an antenna angle, we might just take a look at it and do it ourselves.

CC-H Okay. One other - -

ACDR ...

CC-H Okay. We'll - we'll go ahead and take a look at it. One of the things we are considering was the - using some - the attitudes similar to the mapping pass that we used for window 5 and only to set it up for window 3. But we'll - we'll get - look at it down here and get back so that we can give you a new one.

ACDR Okay.

15 20 25 CC-H Apollo, Houston, for anybody. I guess specifically the CP - probably be the one involved. I do have the new start time for the helium glow scan.

ACDR Okay, Crip. I'm the only one on the headset now.

CC-H Okay. No big - no big hurry here, Tom. But we - want to write it down in the helium glow scan pad: rev 74/75.

ACDR Okay. Rev 74/75: helium glow scan. Okay. Deke will count them. I'm still taking some pictures.

CC-H Okay.

ACDR Trying to.

DMP Okay. Go ahead, Crip.

CC-H Okay, Deke. You got that out? The new time is 123:28:21.

15 21 39 DMP Okay. 123:28:21, and that's page 6-5.

CC-H That's correct, and, also, we need to delete - that is, delete X-ray ops from - from this pass.

DMP Understand. Delete X-ray ops.

15 21 56 CC-H Rog. And I got one item I'd like to go ahead and do now. We'd like you to deactivate the PRIMARY EVAP-ORATOR at this time, if you would.

15 22 05 DMP Okay. It's done.

CC-H And, Deke, no need to respond, but when somebody gets started on these experiments or going down to panel 230, I got one switch that I need to change, and you just tell me when somebody's down there.

DMP Okay. I'll be down there in about 10 seconds.

CC-H Okay. There's no rush.

DMP Okay. Go ahead.

15 22 40 CC-H Okay. What we're going to do is to go ahead and ask you to turn on the X-RAY LOW-VOLTAGE POWER at this

time, and we're going to leave it on. Essentially, we'll be leaving it on for the remainder of the mission. What we're trying to do is to get a little heat into that particular instrument because we think that may cure the problem that we're seeing with what appears to be some contamination. I would suggest that you either put a little piece of tape over it, and we'll also - can modify the SM experiment cue card you got down there to delete turning the LOW-VOLTAGE POWER, OFF on the X-ray powerdown.

DMP Okay. So you want the LOW - LOW-VOLTAGE POWER, ON all the time.

CC-H That's affirmative. And if - just for making everything hunky-dory, if under X-ray ops on that cue card - if you wanted to just put a "verify" after that part where we turn LOW-VOLTAGE POWER, ON normally, that would probably help out.

15 23 35 DMP Okay. We'll fix it. It's ON right now.

15 23 38 CC-H Okay. Fine. Thank you very much.

15 43 35 CC-H Apollo, Houston. We see that you're sitting here all squared away, ready for this upcoming helium glow pass. Might just remind you again - the way we'd talked about it - that X-ray that we're not going to be doing is - occurs several times - turning it on and off along with the EUV on this pass. Of course, that's to keep from dragging it through the Sun. So, remember, we don't want to turn the X-ray back on. And, of course, we do want to get the EUV powered down at applicable places and then powered back up. Might also inform you that, even though my voice hasn't changed, our team has changed. I now represent the voice of the Amber Team, Frank Littleton's team. We're looking forward to the rest of the day's operations with you.

CMP Very good, Crip. Understand you don't want the X-ray on.

CC-H Roger, Vance.

CMP Houston - Houston, Apollo.

CC-H Rog, Vance. Go ahead.

15 47 16 CMP Okay. We've loaded up P20 option 2. And we see that the start for it is - is a PRO at 00 on the DET. Seems to me we'd load up a time in NOUN 34, normally. Don't we?

CC-H Negative.

CMP Don't you want - -

CC-H No, Vance. What we're going to be doing - You should have a time and the - and the pass loaded. And we'll be initiating all of these on - by PROing on your NOUN 34's.

CMP Okay. As long as the times in the past were okay. Understand.

CC-H That's affirm. That's - -

CMP NOUN or 000.

15 47 50 CC-H Okay. And we're about to go LOS when you initiate this P20. And we'll have you again in about 11 minutes through Orroral. That's at 123:36.

15 48 05 CMP Okay. Understand.

15 54 16 ACDR Houston, Apollo.

15 59 35 CC-H Apollo, Houston. We're AOS through Orroral. We have you for 3 minutes.

ACDR Okay, Crip.

CMP And, Crip, I called just before we went over the hill. We wanted to know how the data is coming.

CC-H Okay, what we saw was looking good. We were dropping out due to your maneuver there, but everything right now is looking okay. We're not - we're not looking at data at this particular moment. I'm talking to you on VHF only.

ACDR Right. Okay. Got it.

CC-H ... to STDN.

ACDR Say again.

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16 01 22 CC-H We need that panel 230 switch - UP TELEMETRY switch to
DIRECT, please.

ACDR Okay.

16 01 42 CC-H Apollo, Houston. We are 1 minute from LOS. Next
station contact through Quito in 27 minutes, and if
we could have the UP TELEMETRY switch back to UP
TELEMETRY, when you get a chance.

16 01 53 CMP Okay. UP TELEMETRY switch back to UP TELEMETRY.

16 29 16 CC-H Apollo, Houston. AOS through Quito for 5 minutes.

CMP Roger, Crip. Quito for 5.

ACDR ... program.

CC-H I'm sorry we dropped out there, Tom, and I didn't
catch all your comments.

16 29 39 CC-H We got ... comm right now. Why don't you wait ...?

END OF TAPE

Day 201

TAG Tape 201-09/T-67
Time: 201:16:30 to 201:18:00
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

16 30 13 CC-H Okay, Apollo. I think we locked up pretty good. I'll try to stay out of your hair on this pass.

ACDR Okay, Crip. Everything seems to be going real good on the helium glow.

CC-H Roger. Thank you.

ACDR Crip, today seems like kind of a more normal workday compared to those last five.

CC-H Well, we hoped - be a little bit more relaxed there. Still, it - it's going to keep you busy, I think.

ACDR ... busy quite so ... but it's not like three people climbing all over each other for about 16 or 18 hours.

16 33 51 CC-H Yeah, that vehicle's not that big. We're going over the hill, and we'll pick you up at MILA in about - about 1 minute.

CC-H Going over the hill. See you in MILA in about a minute.

ACDR Okay.

16 35 22 CC-H Apollo, Houston. We're locked up now through MILA and with the ATS. We should have you for about 55 minutes.

CMP Okay, Dick. I mean Crip. Sorry.

CC-H Okay, Charlie.

CMP (Laughter) Joe. I mean Jack. I mean Bill.

CC-H Roger, Ann.

16 40 07 CC-H Apollo, Houston for the CP. We don't want to mess up your maneuvering here, but we'd like to verify - You told us you tried to turn the secondary evap on after we thought we had the - the problem there. I'd like to verify that you did and what you saw with it.

CMP I turned it on, I guess, for about 1/2 minute, and I just noticed that the steam pressure didn't want to come down. It only came down a small bit.

CC-H Okay.

CMP How's the primary evaporator appear to you down there now?

16 40 45 CC-H We're pretty sure that - that we've got a blockage somewhere, and we're - we're concerned what we want to do about it.

CC-H How's the cabin temp running for you guys? Getting a little warm?

ACDR No. It's not too bad, Crip. It's - it's a little warm. We're all here in our T-shirts, but we got the cabin fan running. I'm sure that's pulled some of the cold air out of the docking module down here.

CC-H Okay.

ACDR It - it's not cool. But, on the other hand, it's not warm like it was before.

CC-H Okay. Copy that.

16 45 59 CC-H Apollo, Houston. We're about a minute and a half from LOS through Newfoundland. And we won't have you through the ATS until 124:52. At that time, we'll be talking to you about modifying our attitude so we can put a little Sun on the - the water port, and we will also - I'm sorry, I was telling you a story. We're going to have Madrid in about 5 minutes, as INCO corrects me. But we're going to be deleting activating the primary evaporator, and we're going to leave that off the rest of the day if - if your comfort stays okay. And just try to let that port sublimate out.

ACDR Okay.

DMP Hey, Dick. Where are we right this minute?

CC-H Oh, you're North Atlantic. You're just off the coast of Newfoundland, probably - almost 1000 miles.

DMP Must be right on the airways. I see a couple of contrails, and I can almost make out one airplane down there, going west.

CC-H It's probably a pretty good - Yeah, that'd be just about the primary route between the States and Europe.

DMP Yes.

16 51 29 CC-H Apollo, Houston. We're AOS through Madrid for 2 minutes.

DMP Okay.

DMP Hey, Crip. You may be happy to know that our fish farm is doing well. I don't count any missing ones.

CC-H Very good. Any additional ones?

DMP Well, I was going to just - getting ready to ask you that question, but I've got five in all compartments except one, which has six.

CC-H Okay.

DMP You might check and see whether there's anything unusual about that.

16 53 34 CC-H Apollo, Houston. Getting ready to go over the hill, and again we'll see you when you finish up this helium glow.

17 15 06 CC-H Apollo, Houston. We're AOS through the ATS. We have you for 16 minutes.

CC-H Apollo, Houston. We're AOS, if you read. I need to make some modifications to our Flight Plan here, and if somebody could dig it out.

CC-H Apollo, Houston. How do you read through the ATS?

CMP Loud and clear. How do you read, Clip - Crip?

CC-H Read you the same, Vance. We're going to have to make some mods here to our Flight Plan to help out our evaporator situation, which we don't think's a big ditty, but we just want a roll over and point

at the Sun as I mentioned earlier. And also, we're going to try to solve our X-ray problem that we ran into earlier, and it's going to require a little marking if I can have your time.

ACDR Okay. Go ahead. We're ready to copy it, Crip.

CC-H Okay, Tom. There at about 124:55, where we - I mentioned earlier we had "Deactivate primary evaporator," we want to delete that. We also want to delete at about the same time that verb - "VERB 49 maneuver."

ACDR Got them.

CC-H Okay. I'd like at 125:10 to add in a VERB 49 maneuver to 210, 148, 000. And that'll - that'll point the port at the Sun.

ACDR Okay. 25:10: VERB 49 to 210, 148, 000.

CC-H Okay. That's good. I'd like you to drop down about 125:40 under Deke's column. It now calls out for "X-ray ops and EUV ops." I would like to delete those. In the place of them, add an "X-RAY BACKUP PURGE," which is on page 1-23 of the Experiments Checklist.

17 17 33 ACDR Roger. "X-RAY BACKUP PURGE," page 1-23 of the Experiments Checklist.

CC-H Okay. And we need a temporary modification on that thing in that after he finishes up the purge, it tells him to select "X-RAY HIGH VOLTAGE POWER to 1," and we're going use 2 for the next upcoming operations, and wherever you feel's best to put that note - either here in the Flight Plan to call your attention to it, or to go ahead and pull that checklist out and make a note there for temporarily we'll want to use X-RAY HIGH VOLTAGE POWER, number 2.

ACDR We'll put it in both.

CC-H Okay, fine.

CC-H Tom. You still reading okay?

ACDR Loud and clear.

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CC-H Okay; fine. The ATS angles I have at 125:45, I've got the modified view to a new attitude - I'm sorry, 125:52. That's a pitch of minus 21 and a yaw of 186 for high-gain-antenna angles.

ACDR Okay. With the new VERB 49: pitch of minus 21, yaw of plus 186.

CC-H Okay. Also, Tom, I mentioned that X-RAY BACKUP PURGE. We would like that performed on a time of 125:38.

17 19 14 ACDR Roger. X-RAY BACKUP PURGE, 125:38.

CC-H Okay; fine. That's good. Now if you can call out your X-ray pad for rev 76, we will go ahead and make - we'll make the mods to that pad for time so forth.

ACDR Okay. Stand by just 1 minute.

CMP Okay. Go ahead.

17 19 43 CC-H Okay, Vance. The DET time will be 126:10:09.

CMP Roger. 126:10:09.

CC-H Okay. And I've got a - got a few other mods for that pad I'm going to have to make due to our attitude change and also the fact we need to increase accuracy a little bit on a couple of stars. At a DET time currently of 55, that attitude it calls out - and it says "Verify the attitude" - we will not be there. I would like to modify that DET time to 50 and eliminate the "Verify." That will have to be a maneuver.

CMP Okay. At 55, just change the 55 to 50. Cross out "Verify."

17 20 44 CC-H Okay; fine. And right below that, where it has the "ops," I would like to do at 55 - Add in a DET time of 55. For the "ops," eliminate the "Verify," and I would also like a note to use "HIGH VOLTAGE POWER, number 2."

17 21 15 CMP Okay. The next line down from 50, put 55 in the blank. And cross out "Verify," and add in "HIGH VOLTAGE POWER, number 2" - -

CC-H Okay.

CMP - - for X-ray.

CC-H Okay. And we're almost there. At 10:56, I need to modify that attitude slightly to read 350.40 and 124.50.

CMP Okay. Please repeat those.

CC-H Okay. What we're doing is increasing the pointing accuracy for two stars, which are very faint. We don't think we'll get them otherwise. At 10:56, we need roll of 350.40 and pitch of 124.50.

CMP Okay. Understand. Instead of 350, 350.40. Instead 124, 124.50.

CC-H Okay. And one more, down at 32:35. For roll, want to make that 355.30. For pitch, I want to make that 99.70.

CMP Okay. At 32:35, 355.30 and 99.70.

CC-H Okay. Finally, we got it all through. That's lot of reading. Hope it wasn't too bad on you. And you can go ahead and have your chow.

CMP Okeydoke. Very good.

17 27 30 ACDR Okay. Houston, Apollo.

CC-H Go ahead, Tom.

ACDR Okay. I'm on page 1-23 of the checklist. And it says "X-RAY BACKUP PURGE, OFF." Then it says "Wait 10 minutes." Then "X-RAY HIGH VOLTAGE POWER, 1." What you're saying there is to go right away to X-RAY LOW VOLTAGE, 2 and omit that HIGH VOLTAGE POWER, 1. Right?

CC-H That's after the "Wait 10 minutes" down there at the bottom. Where it says "X-RAY HIGH VOLTAGE POWER to 1," we want to use 2. And that's only going to be for this time, we hope.

ACDR I got you. So I'll circle it.

CC-H Thank you very much, Tom.

CC-H Just a little information. What we've been getting is our counts on that X-ray instrument are just a - above normal what they should be. Also, we're seeing the high voltage running a little bit higher than it should be. And we're not - It almost looks like two separate problems, and we're trying to isolate them out.

ACDR Roger.

CMP Have these been going ever since you first looked at the instrument, or about when did they start?

17 28 46 CC-H It - We first looked - When we first did the powerup, it was basically okay, but when we did that raster scan yesterday, that EUV raster scan, is where we first noted a problem.

CMP I see.

ACDR Hey, Crip. We ran - we were kind of late finishing up last night and missed the news. Sometime today - I don't know, maybe on the next ATS pass if we got some time - if you could give us some news, we'd appreciate it.

CC-H Oh, I'd love to give you some news. I'm just standing by here in the GO mode.

ACDR Okay; then give us now until we got breaklock.

CC-H We're about to break lock. It's probably a couple of minutes now to LOS, and they need to reconfigure the things. So why don't we wait - try to pick it up on one of the - one of the later ones. We got MILA at about 36 minutes from now. See you there.

17 29 36 ACDR Okay. Real good, Crip.

END OF TAPE

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TAG Tape 201-10/T-68

Time: 201:18:00 to 201:19:30

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ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

18 06 01 CC-H Apollo, Houston. We're now AOS through MILA.

ACDR Roger, Crip. Roger. We see we're zipping past Florida pretty fast.

CC-H I'm sorry, Tom. I couldn't copy that.

ACDR Roger. We're seeing the coast of Florida go past pretty fast.

CC-H Rog. That - You should be passing over actually the coast of Mexico there, and Florida should be coming up in just a few minutes.

ACDR Okay. Okay. We thought it was out by the tip there.

CC-H You're - just came over into the Gulf of Mexico.

ACDR Okay.

CMP Hey, Crip. We can see you from here.

CC-H See Houston?

CMP Yeah.

CC-H Very good.

18 06 52 CMP Can see the whole Gulf Coast there from Brownsville up around through Houston and around to New Orleans.

CC-H Great. I haven't had a chance to look outside today. We got pretty weather?

CMP Looks like a nice day from here. I'd say kind of high scattered - -

CC-H Fantastic. Hey, while we're sitting here and got a few minutes, you guys asked about the data a little bit earlier. Like to tell you that the EUV telescope is performing outstanding. It - right now it's approaching right on the state of technology. We couldn't ask for better out of it.

ACDR I think that sounds great, Crip. Sounds great.

18 07 32 CC-H Yeah, and, actually, that little - little deal we went through with the raster scan last night - We ended up doing the raster scan just a couple of degrees off of what we had originally planned to, and we lucked out. We picked up a couple of extra stars that allowed us to determine what the accuracy of the pointing was much more accurately than we would have been able to do without picking those up. So we're looking forward to really getting some great data out of that experiment.

ACDR We're here to give it to you. Just let us know what to do.

CC-H Okeydoke.

ACDR Sometimes you luck out, huh?

CC-H Rog. Well, I don't know - -

ACDR Sometimes you luck out.

CMP Well, we really had that planned.

CC-H That's skill and cunning.

18 08 13 DMP Okay, we're in the middle of your X-ray purge.

CC-H Copy. And we need, down on 230, also, the UP TELEMETRY switch to DIRECT, please.

18 08 31 DM. Okay. You got it.

CC-H Thank you, Deke. Okay. And we've got our command in now and you can go back on that switch to center, UP TELEMETRY.

DMP Okay.

DMP If you go to the Cape tonight, Crip, you got some nice big ones right over Orlando, looks like. Watch out.

CC-H Big bumpers, huh? Well, I haven't got a chance to go flying through them anyhow.

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DMP Too bad.

CMP Houston, Apollo.

CC-H Go ahead.

CMP Funny thing, Crip. Looking at thuderstorms down there, they don't look that much below us. We feel like we're really in a low orbit.

CC-H Yeah. You know, Owen - I remember him making a similar comment, especially like at night when they were coming over and there were a lot of lightning and so forth going in them that - look - I guess the appearance is that you're right - right with them.

CMP Okay, you can see the three-dimensional quality of them very well; very big mushrooms.

18 10 52 CC-H Not to change the subject from thunderstorms, but our troops down here have come up with a pretty - pretty good little idea. If it is getting kind of warm there in the command module, one of the suggestions is that we could take that little duct hose that we use in the DM to mix air with the Soyuz and run it back into the command module. Maybe since the air in there is a little bit cooler, it might - might make you a little bit more comfortable or at least move it around a little bit better. Should be able to just take a utility strap and be able to connect it in - for - on one of the stats there in the tunnel.

CMP Sounds like a good idea.

CC-H Would you gents like me to try to throw a little news at you now?

ACDR Sure.

CC-H You know yesterday I told you about that new cocktail. I guess - They're telling me that all - getting almost as much news as that was your piping "Hello, Darling" by Conway Twitty into the Soyuz.

ACDR They kind of like that country and western in (Russian), huh?

18 12 45 CC-H Right. Right. One - one other happening today was President Ford will go to Helsinki, Finland, July the 30th through August the 1st to take part in a 35-nation summit meeting of the European Security Conference. The President is expected to leave Washington by next Saturday on the Helsinki trip, which is understood to be the forerunner of additional stops in Bonn, Warsaw, Bucharest, and Belgrade. Mrs. Ford is expected to accompany the President on the 10-day trip. We got a keyhole coming up here and I'm going to hold up for a moment. I'll come back at you a little bit later.

ACDR Roger, Crip.

CC-H Okay. We're out of the keyhole again. We talked a little bit about the country and western awhile ago. One little bit of sad news from the country and western fans was that country singer Lefty Frizzell died Saturday night from a massive stroke. I remember Lefty was the one that really got famous for like - "If You've Got the Money, Honey, I've Got the Time."

ACDR Yeah, I remember real well. Sorry to hear about it.

18 14 43 CC-H Little bit of news from down south of here. The - in San Salvador, Miss Finland, Anne - I think the name is pronounced something like Pohamo, was named Miss Universe 1975 over representatives from 70 other countries in the 24th annual pageant broadcast throughout the world from San Salvador. Runners up included Miss Haiti, Gerthie David; Miss U.S., Summer Bartholomew of Merced, California; Miss Sweden, Catharina Sjodahl; Miss Philippines, Rosemary Singson Brosas.

ACDR Crip, we've got ... echo.

18 15 23 CC-H Okay. Understand, we got the echo. That's caused when we lock up on the ATS, and we've still got you here. We'll clean it up.

CC-H Okay. We sometimes get into a simultaneous uplink coming at you both through the FM and then through the ATS. And I guess the double effect there is - is an echo. I think we got that cleared up now.

ACDR Sounds great, now.

CC-H Fact you were coming back at me echoing, too.

ACDR Roger.

18 16 55 CC-H One little item of news to - set your memory, was 6 years ago today at 3:17:40 central daylight time we landed on the Moon. At 9:56, that's when Neil said his famous words about "small step for man, giant leap for mankind."

ACDR Roger. Remember it well.

DMP Say, what day of the week is this, incidentally?

CC-H This happens to be Sunday.

CMP ..., our day off.

CC-H Oh, yeah. We'll get them off after you guys get back. Y'all - y'all are certainly not getting a day off today.

CMP We're not complaining.

CC-H To continue with the news - -

CMP We don't like days off up here.

18 17 52 CC-H (Laughter) Well, I don't know. It - from down here it would - it would appear that we're working you pretty hard, but glad you're enjoying it anyhow. To continue on with the news a little bit, the President intends to veto on Monday a bill rolling back the price of U.S. oil to \$11.30 a barrel, a spokesman announced today. Press Secretary Ron Nessen said that the President believes strongly this piece of legislation is unacceptable and would increase U.S. reliance on foreign imports by as much as 350 000 barrels a day. Optimism grew today that a nationwide postal - postal strike can be avoided, but the postal service prepared plans for use - using troops, if necessary, to move the mails. Postal workers and officials of the postal service met separately today with Federal mediators counseling both sides prior to resuming joint

sessions later in the day. Senate Democratic leaders won the first round today in their efforts to block any delaying tactics against the bill to extend the Voting Rights Act for 10 years. As a result, the Senate will vote Monday on a move to limit debate on the motion to consider the extension. The Voting Rights Act, which under - under which hundreds of thousands of southern blacks have registered over the past decade, expires August the fifth. Senate leaders have said they will stay in session past the August first schedule to start on a month-long recess, if necessary, to ensure the action on the extension. After a delay of more than a year, Senate hearings were - are scheduled later this month on legislation to implement recommendations on how to prevent future Watergates. "Only by acting on this bill can we truly put Watergate behind us," said Senator Abraham Ribicoff, Chairman of the Senate Government Operations Committee.

CMP Roger.

CC-H Okay. I'll go ahead and hold up on any further conversation here for your upcoming pass.

18 20 14 ACDR Okay. We'll maneuver to this X-ray UV attitude at 50 on the DET, just like you said. We've got it loaded in for VERB 49.

CC-H Okaydoke.

18 20 28 ACDR Okay, Dick. I just went to X-RAY HIGH VOLTAGE POWER, 2.

CC-H Okay. Fine. Thank you.

ACDR Thanks for the news.

CC-H Well, wasn't really exciting. You guys are still making most of it.

ACDR Well, we've got some great help from people like you and the rest of them at that center on the ground, too.

CC-H Yeah, these troops down here have been working hard.

18 22 19 ACDR And we're maneuvering to the first attitude.

CC-H Roger.

CMP Crip, how should we treat the water boiler after this? Just open it at the regular time or what?

CC-H No, we want to hold up on activating it. I can walk you through this - this day's ops, but we would like to leave it off for today until we talk to you - look a bit further at it.

CMP Okay.

CC-H Would you like me to go through with you and mark them all out?

CMP Yeah, sure. I can do that right now.

CC-H Okay. Well, don't want to - don't want to interfere with this operation you're doing.

CMP Yeah, on second thought, why don't we hold up for a few minutes?

CC-H Okay. In fact, if you like, we don't have to mark them. We'll just remind you each time, just ahead of time.

CMP Okay. Main thing then is just the philosophy - when we get a chance.

CC-H Yeah. We'll leave it off until we - We'll just keep watching it down here, and when we're sure it's squared away, we'll get back with you.

CMP Right.

18 23 29 CC-H You guys still fairly comfortable as far as temperature goes?

CMP Strangely enough, it's been pretty good, just lately.

CMP We kind of thought it'd heat up quite a bit when we didn't have the water boiler going, and we haven't noticed it too much.

CC-H Well, that's good.

18 24 25 CC-H Apollo, Houston. We're still seeing high counts on that X-ray data, and, if we can, we'd like somebody down in 230 to take the HIGH VOLTAGE POWER switch from the X-RAY to OFF for 10 seconds and then to 1.

ACDR Okay. Deke's working it now.

CC-H Thank you, Tom.

18 25 58 DMP Okay. She's in 1.

CC-H Okay. Thank you, Deke.

18 35 05 CC-H Apollo, Houston. Our X-ray still is not looking all that great, and we would like to minimize the time that we have the HIGH VOLTAGE POWER on. What we would like you to do is - down - You've got a maneuver coming up at 10:56, and it's a pretty long one. What we'd like you to do is at 10:56, go ahead and turn the HIGH VOLTAGE POWER on the X-RAY to OFF and then at 15:46, when we're back to the data take time, we'd like to turn it back ON - back to 1.

ACDR Okay. HIGH VOLTAGE on the X-RAY off at 10:56 and back on at 15:46.

CC-H That's affirm, Tom. Sorry to keep bugging you around on here, but we're trying to improve the data as good as we can.

ACDR Understand. No problem.

ACDR Houston, Apollo.

CC-H Go ahead, Tom.

18 38 35 ACDR Okay, again reviewing. At 10:56, the HIGH VOLTAGE, OFF and then after we finish the maneuver and at 15:46, the HIGH VOLTAGE back ON, and you want number 1. Right?

CC-H That's affirmative.

18 46 01 CMP Houston, Apollo.

CC-H Go ahead.

CMP Crip, how's our hydrogen and oxygen going? We haven't talked about that in all these day. Just curious, redline wise.

18 46 28 CC-H Okay, Vance, we're in good shape. We're running right on on hydrogen, right on what we anticipated - a little bit less, I guess, on oxygen, but we've got a 9-day capability.

CMP Very good.

18 53 07 CC-H Apollo, Houston. We had good data there for about 3 minutes off the X-ray, and now it's gone out on us again. And if we can, we'd like to get that HIGH VOLTAGE once more turned off for 60 seconds and then back on.

ACDR Okay. Vance ...

CMP ... off and on.

18 53 33 CMP Coming off now.

CC-H Okay, Vance. Thank you.

18 54 35 CMP And back on again.

CC-H Okay. Thank you.

19 00 28 CC-H Apollo, Houston. Vance, if you could do it once more for us, we'd like to go down to 230 on that X-RAY power switch - HIGH VOLTAGE POWER and take it to OFF for 60 and then back ON.

CMP Okay. HIGH VOLTAGE, OFF, for 60 and back ON.

CC-H Apollo, Houston. I boo-boomed awhile ago and didn't give you your start time for your DET on the next pass coming up, and it's back-to-back. You might want to write that down on the next page.

CMP Okay. That's H - the helium glow scan?

CC-H Yes, sir. Helium glow 76/77. Start time on it is 127:00:55.

CMP 127:00:55, Crip. Got it.

CC-H Okay. Thank you.

19 02 23 CC-H Apollo, Houston. We're about to go AOS [sic] from the ATS. We'll have you again in 12 minutes at Vanguard; that's 126:53 - 126:53.

19 02 34 CMP See you then.

19 14 24 CC-H Apollo, Houston. AOS Vanguard, 7 minutes.

ACDR Okay, Crip.

CC-H Okay. We'd like to relay to you - we would currently like to delete the X-ray ops from this upcoming helium glow scan.

ACDR Roger.

CC-H Apollo, Houston. Copy. We would like to delete X-ray ops from the upcoming helium glow scan at - It's turned on not at the first but over - over on the second page of the thing.

CMP Roger. We understand.

CC-H Okay.

ACDR Say, Crip.

CC-H Go ahead.

ACDR The Sun angle may be working on that boiler. Some big hunks of ice just came off as it came out in the sunlight.

ACDR They're pretty good size pieces of ice.

CC-H Okay. You think those came off of where the - the evaporator port is?

ACDR Yeah, they came off from that side all right.

CC-H Okay.

19 15 45 CC-H Okay. We appreciate that information, Tom. Speaking of ice, you reckon - We're a little bit concerned about that cryo freezer. You know you - we had you

undo it last night, and you had some problems. If Deke or somebody's got some time to go down there and take that cap off for us and wipe off the inside of the plug with some tissues or something and put it back on, make us feel a lot more comfortable for tomorrow.

ACDR Okay. Okay. I'll do it in a little bit.

19 17 17 CC-H You gents might notice over there in the left-hand column you were scheduled for a block update, but it seems like a kind of busy time getting ready for that helium glow scan. We'll give you that sometime later.

 CMP Houston, Apollo.

 CC-H Go ahead.

19 20 41 CMP Okay, Crip. We mistakenly got the X-ray on also on that one. I'm going to turn it off immediately. Wonder if you want the standard powerdown. I thought I'd check with you first.

 CC-H Okay. You can go ahead and do the X-ray powerdown, as we've modified it, of course, leaving LOW VOLTAGE POWER, ON.

 CMP Rog.

19 20 52 CC-H Okay. We're 1 minute from LOS. Next station contact, we've got a short one at Goldstone in 15 minutes at 127:14.

19 21 19 CC-H Make sure that we get that door closed on the X-ray before we start our roll maneuver.

END OF TAPE

Day 201

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Time: 201:19:30 to 201:21:00
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

19 36 18 CC-H Apollo, Houston. We're AOS through Goldstone for 2 minutes.

ACDR Okay.

CC-H We are 1 minute from LOS. Next station contact will be Newfoundland, in about 7-1/2 minutes.

ACDR Hey, Crip.

CC-H Rog.

ACDR Hey, I just went up to start our ops just like planned - and our furnace pressure is reading zero. It's supposed to be greater than 4, which means - -

CC-H Copy. Reading zero, supposed to be greater than 4. I'll try to have word on you - on it for you at Newfoundland. Hold up on it.

19 38 03 ACDR Roger.

19 45 32 CC-H Apollo, Houston. We're AOS through Goldstone. Should have you for about 7 minutes.

DMP Okay.

CC-H I'm sorry. How about Newfoundland?

DMP That sounds better. Is it?

CC-H Yeah, well, I get lost easy.

DMP We've just been looking at Wisconsin through our spotting scope, and across Lake Michigan, where the clouds are getting ...

CC-H Ah-hah! You knew where you were better than I did, then.

CC-H Any chance I could talk one of you gents that isn't too busy into digging out a pad for me? To improve our data a little bit on this upcoming rev 80 for EUV, we would really like to run the - one of the EUV contingency pads - the EUV contingency pad for

rev 80, which is buried down there in Alfa 2. Any chance somebody could sneak under the couch there, and get it?

CMP ... for you.

DMP The furnace, while I got you, Crip -

CC-H Okay. Regarding that furnace, Deke, we have - this kind of sample we got in there. It's a little bit different from what we've been running. And we suspect that it's just outgassing. It's going to take a little while for that pressure to get down. So what we'd like you to do is, just to - wait awhile on it. And go back and check it a little bit later, and see if the pressure's dropped.

19 46 54 DMP Okay. We'll do that. And as far as the freezer is concerned, I've had the cover off of that. There is a lot of frost on the plug. But the problem is - in the process of opening that thing, we've accumulated a lot of frost on the remaining samples and the bottom of the plug, and that's where our binding is occurring. It's back in, and we're in good shape now. So I propose we don't take the lid out any more often than necessary.

CC-H Okay. Understand the frost was forming on the bottom of the plug, or down on the samples themselves?

DMP That's affirm.

CC-H But - I didn't understand whether - -

DMP ... and the plug. And any time you take it out, of course, we've got enough humidity in here to load it up in a hurry.

19 47 41 CC-H I - I didn't - I wasn't quite with you, Deke. It's on - the frost is on the bottom of the plug. Is that correct?

19 49 37 CMP - - Heard your plan. And he'll be with you in a second.

CMP Okay, Crip. Almost got lost under the couches, finding it. But here it is. I'm ready to copy, if you'll give us the page.

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Page 3

CC-H Okay. What we want you to do is to dig out the -
under the EUV contingency pads, rev 80, which is
page 4-4. And all you've got to do is just pull
that one out, and we'll use it to replace the rev
80 pad that we've got in your Flight Plan Supplement.

CMP Okay.

19 50 53 CC-H Since you went to all the problem of digging that
book out, you might put it in some easy - more
accessible place than A2.

CMP Sounds like you plan to use it some more, maybe.

CC-H Well - I don't. But the people in the backroom
might.

CC-H Okay. We're 1 minute from LOS. Next station con-
tact in 3 minutes, through Madrid. That's at 127:33.

CMP Copy.

CMP Okay, Crip. Here I have page 4-4, EUV pad, rev 80,
contingency; and replace the one in the book - or,
in our Supplement - Flight Plan. I understand.

19 52 16 CC-H Okay, Vance. That's - that's fine. Thank you.

19 55 29 CC-H Apollo, Houston. We are AOS Madrid. We have you
for 6 minutes.

ACDR Roger. Understand. There's no ATS voice until
128:57.

CC-H That's affirm. In fact, we've even released the
satellite such that you couldn't tune it in if you
wanted to.

ACDR Oh, really.

CC-H Yeah. We figured we wouldn't - wasn't going to
need it, so we might as well let them - let them
relax.

ACDR Okay.

ACDR Will we have it on and off for the rest of the
mission?

CC-H Oh, yeah. It's just for this one rev that we've released it.

ACDR Oh, okay.

CC-H No, couldn't give up all this good voice and data.

19 56 13 ACDR Right.

CMP Oh, the satellite has other duties, too, I understand. It divides its attention with us.

CC-H Apollo, Houston. Is the DP available to let me bend his ear for a moment?

DMP Yeah. Go ahead, Crip.

CC-H Yeah, Deke. The - A little bit later, at around a little after 129 hours, we've got a TV camera setup called out for you. And you probably heard us discussing the last couple of days about a camera that's - we're - we were describing as bad; it's, at least, not good. And that currently is the one we've got installed in 871. What we'd like to do is to take the one we've got in 873 and put it in that 871 location for that upcoming TV. And, I'm kind of recommending that what you might do is take a piece of tape or in some way, label that one that you pull out of 871 as - as bad or something, and you can either put it in 873 or you can put it someplace and tuck it out of the road. I believe we'll probably try not to use that one for the remainder of the mission. Also, when you - when you swap it, we want to leave the cables connected as they are - the cables in the U-mount, so you don't need to pull those out.

19 58 06 DMP Okay. Really, you just want to swap around from 871 to 873 and vice versa. Is that correct?

CC-H That'll be fine. However, we're going to be using 873 again a little bit later, and we'll be asking to put one back in it, so it would just require another swap. You can do whatever you would like with that one you pull out of 871 - the best place you think to stow it. If 873's a good place, do that.

DMP Okay.

CC-H And, Deke, when you go back there, you might get another reading on the furnace and let us know how it's coming.

DMP Okay. We'll do that.

CC-H Back there, or up there, whatever way you consider that direction to be.

DMP Any way you want, we'll go it.

19 59 38 DMP Say, Crip, I just went up and checked that, and we're still reading zero on that pressure on the furnace.

CC-H Okay. And, of course, Deke, you can verify for us that the VENT and ISOLATION VALVES are opened to vacuum.

DMP Yep. I've done all that. I checked the caps, and I even got the old shroud cover closed for a change ...

CC-H Okay. We copy all that. And we're trying to make up our mind here what we want to do about it. We'll get back with you.

DMP Okay.

CC-H Okay. We are 1 minute from LOS. Our next station contact will be through Orroral in about 40 minutes. That's at 128:18 - 128:18.

ACDR Okay.

CMP Incidentally, I just has an opportunity to use the new binder proposed for Shuttle, I think, in the Supplementary Flight Plan, and we'll have a couple of comments on that a little later.

CC-H Okay. We would appreciate it.

20 01 10 CC-H Apollo, Houston. You got a GO to continue furnace operations.

20 01 14 ACDR Okay. We're going ...

20 47 43 CC-H Apollo, Houston. We are AOS through Vanguard for 5 minutes.

ACDR Roger, Crip. We're progressing right on schedule.

CC-H Very good.

CC-H A little information for future planning. We're going to end up modifying what we've got planned for this next X-ray pad, and I'll be giving you that when I see you at Goldstone just after you finish this helium glow.

20 48 13 ACDR ... off.

ACDR Hello, Houston. How do you read?

CC-H Reading you kind of weak, but clear. Go ahead.

ACDR Okay, to copy this data down at Goldstone - is that the one that Vance got out of A-2 on 4-4?

20 48 56 CC-H Negative, negative. What we're going to do is - we're just going to do another backup purge on the X-ray unit - if that - where we've got time scheduled for that pass, and we're not going to do any - any pass. I'll be talking about - about that a little bit more at Goldstone. We're going to save that one he pulled out - 80, and do it at 80.

ACDR Okay.

CC-H For your information, for Deke, I guess; the - on that furnace, we're looking at data now, and the temperature looks good and we think everything's squared away, and it was just that particular sample that was the reason we couldn't get the pressure down.

20 49 32 DMP Okay. Well, I was reading 1.3 when I put it in, but it's back down to zero again now.

CC-H Copy.

DMP Incidentally, Crip, I started that thing on 127:50.

Day 201

TAG Tape 201-11/T-69
Page 7

CC-H 127:50. Thank you, Deke. Appreciate that. Kind of helps us know what's going on down here when we get those little updates.

DMP Okay.

CC-H Okay, guys. We're 1 minute from LOS, and our next station contact will be through Goldstone at 14 minutes from now, and that's about 128:26 - I'm sorry, about 128:44.

20 52 21 ACDR Okay.

END OF TAPE

Day 201

TAG Tape 201-12/T-70
Time: 201:21:00 to 201:22:30
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

21 06 23 CC-H Apollo, Houston. We're AOS through Goldstone for 6 minutes.

ACDR Okay. Roger. We're coming up - just about to finish the helium glow scan.

CC-H Okay. When you finish that up give me a holler, Tom, and I'll give you a VERB 49 maneuver for where we want you to go next.

21 08 06 CC-H Apollo, Houston. We see that you're back in P00 now, and if you could give us ACCEPT, we'll go ahead and load you a state vector, and when you're ready to copy, I can give you the roll, pitch, and yaw for a VERB 49.

ACDR Ready to copy. Go ahead.

CC-H Okay. For a roll of 110 - I say again, roll is 110, pitch of 129, yaw of 000. When we finish your uplink here you're - got a GO to go ahead and perform that maneuver.

ACDR Roger. Roll, 110; pitch, 129; yaw, 000; on the VERB 49.

CC-H Okay. That's fine.

CC-H And the ATS angles that we got down below are still going to be good for picking that up.

ACDR Okay.

CC-H And if you're still copying, I'd like to tell you what we want to do over here on this X-ray pass at 129:07.

CMP Go ahead.

21 09 17 CC-H Okay. What we'd like to do is to perform an X-ray backup purge, similar to what we did while ago. It's on the Experiments Checklist, page 1-23. And where it calls for it for 5 minutes for the purge to go, we want to do - do it for 15 minutes instead of 5 - that's before you turn it off.

CMP Okay. After we get the attitude I - I suppose on your key, we'll do an X-ray backup purge at page 1-23, Experiments Checklist, do a 15-minute purge instead of 5 minutes.

21 10 00 CC-H That's affirm. We want to do it at - do it at 129:08, which will be sunset. And at the conclusion of that purge, instead of turning your HIGH VOLTAGE POWER, on, as called for, we want you just go ahead and close the door on the - close the cover on the X-ray experiment.

CMP Okay. Understand. The backup purge will be performed at 129:08, and at the completion of the backup purge, we do nothing more than close the cover on the X-ray.

CC-H That's affirm. The current checklist does call for you to go ahead and turn HIGH VOLTAGE POWER, on, but we don't want to do that in this particular case. Okay. The - we completed our load and the DSKY belongs to you guys again, so you can go ahead and do that maneuver at your leisure.

21 11 17 CMP Okay. Starting the maneuver, Crip.

CC-H Okay. That - that's fine. Vance, one item I need to clarify. Awhile ago when I told you about slipping in that rev 80 pad, I might have fouled you up a little bit, in that the rev 79 pad was on the opposite side of that, and we are still going to need that one, in case you did pull it out of the book, or anything.

CMP Okay. Understand.

CC-H We're about 30 seconds from LOS and we'll have you again at Newfoundland in 6 minutes.

CMP Okay.

21 12 59 CC-H Okay. We copy that you did not do a rewind on the DSE and we need that.

21 18 11 CC-H Apollo, Houston. We're AOS through Newfoundland. Should be with you for about - oh, 52 minutes with the - with the ATS.

ACDR Okay, Crip. we'll be ready at the time that you suggested.

CC-H Okay, fine. One other item I might suggest in trying to look ahead, here, and seeing where you are in the Flight Plan, since the activities you have on this X-ray purge aren't going to be too busy. We've got called out for some leg volume measurements over at about 131:30. And I guess Deke and Tom might think about trying to get - get those out a little bit early, here, in some of this time, if it looks like it might be a little bit easier to do, and spread that out a little bit.

DMP Okay.

ACDR ...

CMP Seems that's a really a good idea - avoid these real jammed periods.

CC-H Yeah. If we can spread out some of these activities and make it a little bit easier. That's the way to go.

CC-H One other item I'd like to get in sometime, if - if it's convenient for somebody to get out the Updates Book, I can go ahead and give you a rev 108 block data.

CMP Stand by. We'll get the book.

21 19 41 CC-H I'm also going to need, on panel 230, the UP TELEMETRY switch to RELAY, and you might as well stand by there, when you get it.

CMP Okay. Go ahead. We're ready to copy.

CC-H Okay. We're switching over here on the ATS. I want to make sure you read me okay.

CMP All right.

CC-H Understand you copy me good. Vance, you're cutting out a little bit.

CMP I'm hearing you fine.

21 21 40 CC-H Okay, fine. Here I come at you - rev 108, NOUN 33, 176:57:24; minus 194.1, plus all balls, plus 018.3; all balls, 329, 359; 176.9; 00:07; 197, 1568.7,

25756, 25:52; 27:09, down range error's NA; 056/314, 32:48, 35:36. Before I continue on, I need to verify on 230, and get the UP TELEMETRY switch to RELAY, please.

CC-H Okay. Continuing on my read. Starting with latitude, it's plus 22.00, longitude, a minus 163.00. Standing by for your readback.

CMP You cut out on the latitude.

CC-H Okay. Latitude is plus 22.00. Longitude is minus 163.00.

(Music)

CMP Okay. Readback block data: rev 108, 176:57:24; minus 194.1, plus all balls, plus 018.3; 000, 329, 359; 176.9; 00:07; 197, 1568.7, 25756, 25:52; 270 - 27:09, NA; 056/314, 32:48, 35:36; plus 22.00, minus 163.00.

21 24 22 CC-H Okay. That's a good readback. And I've got four remarks for you. Number 1 is for command module/FM sep. Yaw left at ... Copy 314.

CMP Copy 314 left for sep.

CC-H Roger. Number 2: NOUN 48, your pitch trim is minus 0.23, yaw trim is minus 0.85. Your CSM weight is 25 853, your docking module weight is 4500. Over.

CMP Rog. Pitch trim minus 2 - 0.23, yaw trim minus 0.85, weight CSM 25 853, the DM 4500.

CC-H That's a good readback, Vance. Thanks a lot.

21 25 29 CMP You bet.

CC-H And, Vance, on that - we keep chasing you around, after this X-ray instrument, to let you know we have got some good data back from it, so it's not being completely lost. We're still trying to correct the problem. That's why we're doing the long purge, of course. We think it to be correlatable with temperature of the instrument, and that when it's real cold, if we're not - not getting good data, we're still trying to understand that. Also a little bit of information for you. The helium glow is working real well, so on the EUV and the helium glow we're getting excellent data.

CMP Okay. That's really great. Hope we can get the X-ray fixed up.

21 26 10 CC-H Okay. We're going to keep after it.

CMP And we'll be doing that backup purge in a little less than 4 minutes.

CC-H Okay. Copy. Also, Vance, if you've still got the Flight Plan out working with it, following this purge, there is - following this X-ray purge and X-ray pass there was a callout under the DP column to activate the primary evaporator. We would like to still leave that deactivated and be interested in hearing how the temperature situation's going now. How do you feel?

CMP Roger on leave it deactivated. We don't need it too badly right now. Strangely enough, temperature's going very well. Been getting apparently better ever since we undocked.

21 26 57 CC-H Yes, that - that's amazing and that's good to hear. Did I understand you earlier to say that you'd been running the cabin fan some or was that - is that correct?

CMP That's right. From time to time, when it got uncomfortably warm, we would run it particularly because circulation tends - tends to make it feel better.

CC-H Rog. Did you gents ever rig up that hose coming from the DM into the CM? Or if you do, we would like to know when you do it.

CMP Okay, we haven't done it yet, because right now it's fairly comfortable, and periodically we turn on the fan if we need it. But, we - we're kind of holding that in our pocket, in case - especially for tonight.

CC-H Okay, you might do that right now, we are considering, since it would slow down your metabolic rate, that the thing shouldn't be heating up, and we're considering leaving the evaporator deactivated.

21 28 58 CMP Okay, very good.

CC-H Apollo, Houston. While we're sitting here and we're looking at the purge - or that - or the ex - exercise

that the AC's got coming up here, we suggest to try to get as close to the end of the DM as we can. That - we used the longest comm umbilical, which should be the one for the right-hand couch, normally Deke's.

CMP Okay, I'll pass that on to him. He's up there right now.

21 32 59 CC-H Okay. Also, Vance, he's got a TV prep coming up, and we would appreciate verifying after he does that prep - that particular camera light comes on, to make sure that it is operative.

CMP Okay. I think the prep's probably done now, I'll check.

CC-H Okay.

21 35 30 ACDR Houston, Apollo.

CC-H Rog. Go ahead.

CMP Okay. The camera's set up. The prep is like I said, it has been completed. But we had a question. During Tom's exercise period, why do you think you would need a comm cable?

CC-H This is the one that we're supposed to do on biomed. It's noted out for - got him under - to don the OBS there at about 129:45 or so.

CMP Okay.

CC-H One a day.

CMP Terrific. Yeah. Okay.

CC-H One a day. And this is his day.

CC-H For your information, Vance, tomorrow's your turn in the barrel.

21 36 52 CMP Oh, okay. I'm looking forward to it, Crip.

CC-H Okay. We'll just spread it around here.

21 54 17 CC-H Apollo, Houston for the CP. Vance, we still got, oh, 18 more minutes of night here, but we assumed that you should have finished up with that purge about now, and we just wanted to make sure that we got the cover closed on it before we go out in the sunlight.

CMP I'm still - after turning the purge switch, waiting 10 minutes, and I sort of assumed that that was for the case of when you turn on the high voltage power, but not being sure, I thought I'd wait 10 minutes anyway. Guess I could have asked. Okay to close it now, I assume?

CC-H It's okay to go ahead and close it, and I - you assumed correct about the - the wait there. One other item, whenever you get a chance to it, after you do that, I have the updates for the DET times for rev 79 and 80 when you can get the Supplement out.

21 55 16 CMP Okay, stand by one. I'll close this cover first.

CC-H Okay, no rush.

CMP Okay, ready to copy.

CMP Houston, Apollo.

CC-H If I could talk on the right loop, I could get up to you. For the DET time for rev 79, Vance, it's 130:36:36. And we are planning on doing that X-ray pad and seeing how our data looks.

CC-H Apollo, Houston. Did you copy that time, Vance?

CMP Roger; I did. Yeah, excuse me a minute, but what do you mean by DEB [sic] time there? I guess I just don't find the right spot or it doesn't - -

CC-H Okay, I'm - it's the time that we set the DET counting up to - up there at the top, which is your sunset time.

CMP Oh, okay. I thought you said - very good, I thought you said DEB. Very good, I got it. And we'll go ahead with it.

CC-H Okay, fine. Also, now the time for the EUV pad, and this is that rev 80 contingency pad I had you dig out while ago. I'll wait until you get that out.

CMP Right,

CC-H Okay. It's 1 - 132:05:27.

21 58 20 CMP Okay. Got it. 132:05:27.

CC-H Okay, Vance, then - -

CMP The first - -

CC-H Sorry, go ahead.

CMP And the first one was 130:36:36.

21 58 33 CC-H That's right, 130:36:36. That - that is correct. Vance, one item here I ought to remind - I was just thinking about - looking at all these pads. As much as we're running this DSE, and we're not around you, just like to remind you that, of course, everything you say on intercomm, we're managing to be able to get ahold of since it's recorded on the DSE for us.

CMP Okay, thanks for the reminder. We'd probably forget.

CC-H I know I would.

ACDR Crip, how do you read me?

CC-H Loud and clear, Tom. Go ahead.

22 03 07 ACDR All right.

CC-H AC, Houston. We're reading you loud and clear. Go ahead.

CC-H Apollo, Houston. Do you read, Tom?

ACDR Loud and clear, Crip. Real loud and clear.

CC-H Okay. We're with you any time you want to talk to us. Still got you for about - oh, 6 more minutes here.

ACDR Okay. I've got this biomed on and I'll start doing some exercise.

CC-H Oh boy, I bet that's fun.

ACDR I've waited all of 5 days for this.

CC-H (Laughter) Okay. I'm glad you're finally getting to it.

ACDR Not the excer - not the exercise. I'm putting on that wonderful harness.

CC-H I suspected that was what you were talking about.

22 04 26 CC-H Okay. And for a reminder on that. We - we're not looking at live data now, Tom, and we will need the DSE on to - to record that.

ACDR DSE on - you mean the VTR, the DSE or what?

CC-H Tape recorder.

CC-H Apollo, Houston. Tom, I'm informed that we've got a little show and tell scheduled there, so - and unfortunately, with our data recording plan and dropping it, we're going to need you - need you to delay starting that exercise, and we'll have to get it on DSE and VTR as what - as planned right now, after we leave Hawaii, and that's not going to be until about, oh - 0.5, almost 30 minutes from now.

ACDR Beautiful. It's all right, Crip.

CC-H I thought you would appreciate that.

ACDR Every little thing helps, Crip. (Laughter) Look like Alley Oop and swing through the trees - a-a-ah!

CC-H (Laughter) If you say so.

22 08 40 CC-H Apollo, Houston. We are about to lose you here through the ATS, and one item we need is on the UP TELEMETRY switch on panel 230. We need to go back to center UP TELEMETRY position, please, and we'll see you in about 2-1/2 minutes at Orroral.

22 08 55 ACDR Okay.

22 13 54 CC-H Apollo, Houston. We're talking on VHF at you through
Orroral. It's only a little over a minute here, and
our next station contact is going to be at Hawaii in
15 minutes, at 130:07.

ACDR Okay, Crip.

CMP Okay. And Tom would like to know when he should
start the exercise? Right - I'd presume, as scheduled
at 130:15. Is that right?

CC-H That's approximately correct. We're going to be re-
winding the DSE when we go over the hill at Hawaii,
and you're going to have to wait until it's rewound
by looking at the talkback, and then when that happens,
you can have at it.

CMP Okay. When the DSE talkback's barberpoled, he'll
have at it.

22 14 36 CC-H That's affirm.

22 29 35 CC-H Apollo, Houston. AOS through Hawaii for 6 minutes.

ACDR Okay, Crip.

CMP Okay, Crip.

ACDR Okay. I'm exercising away up here in the docking
module, Crip. How long do you want it?

22 29 51 CC-H Oh, I'm afraid that I loused you up there, because
what I was - -

END OF TAPE

Day 201

TAG Tape 201-13/T-71

Time: 201:22:30 to 202:00:00

Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

22 29 56 CC-H - - just trying to tell you while ago, we wanted you to gut it when we went LOS from Hawaii, not - not from Orroral.

CMP Only another 20 minutes, Tom. That's not bad.

ACDR (Laughter) Okay. Well, we had a TAPE MOTION stop, so we thought that was when.

CC-H Sorry about that. I did - didn't make myself plain. We're still in the process of - Can you tell us what you - You started the DSE, is that right?

CMP Yeah, about 5 minutes ago.

CC-H The - You've already started it. You can go ahead and press on, and we'll go ahead and get it. Are we getting VTR also?

CMP That's right.

CC-H Okay. That's fine. No big problem.

22 32 31 CC-H Apollo, Houston. Tom, we've actually - If you've been going for as long as you said there on - on exercise, we've got an adequate amount, and we'll just go ahead and take - take the tape recorder and rewind it and set it up for our next pass. And you can do what you like regarding further exercise.

ACDR Okay. I'll go here about 4 or 5 more minutes and then - You want us to rewind it, or do you want to command it?

CC-H We'll go - we'll - -

22 33 04 CC-H Rog. You can press on, and we'll go ahead and handle the commanding of the DSE.

ACDR Okay. Thank you.

CMP And, Crip. Just for general interest, it looks like the Pacific is just full of eddies. Great big eddies. We see them a lot. And we - we think they're eddies because there are giant cloud-ringed areas that sort of make you think the water there is either hotter or colder than the rest.

CC-H Rog, Vance. Any - any estimate on size - diameter.

CMP Well, we'll - we'll give you some. They're all - many sizes. We'll try to give you some maximums and minimums here shortly.

22 33 48 CC-H Okay; fine. Also, we would be interested in some further comments regarding the - the attitude that you've got right now for this vis obs pass. I know Tom commented on it this morning, and we were looking at trying to do something different. However, it doesn't - doesn't appear to be too easy right now, and we were wondering maybe it's just a matter of getting used to it a little bit.

22 34 08 DMP Well, I'll tell you. We just passed Hawaii, and I got zero for two reasons. Number one, it's cloud covered over the island that we're looking for, and secondly, it was too far to the north, and - don't know - This attitude is probably not the greatest. But I - I hesitate to recommend a better one right at this point.

22 34 31 CC-H Okay. We're still looking at it. A little bit reluctant to come up for - with attitude because of a different attitude that we haven't really wrung out like we have what we got. But if we're not getting the data with what we got, well - we'll - we'll press on and continue to look at it.

22 34 45 DMP Well, this is a good attitude to acquire things ahead. You know, you see them coming up, which is good. The problem is we're really rotating along here, and once it gets into view where you can shoot it with a camera, you go by it in about 5 seconds.

22 35 00 CC-H Rog. Understand. We're about 30 seconds from LOS. And our next station contact will be through Newfoundland in 15 minutes. See you there at 130:28.

22 35 10 DMP Okay.

22 50 49 CC-H Apollo, Houston. Newfoundland for 7 minutes.

ACDR Good evening, Dick.

CC-H Hi, Tom. Good evening to you.

DMP Houston, Apollo.

CC-H Go ahead, Deke.

DMP Okay, Dick. We just finished an Earth obs pass here, and talked to Crip about the Hawaii one. We hit the Washington coastline, and we did get a few pictures of that area and partly accomplished our effort then. We've been doing a little experimenting since then. We've - Vance has struck a 10-degree pitch down towards the horizon, and we think we can tolerate about another 20 to get us into better viewing attitude for Earth obs. Problem we've got here is that we're seeing way too much stuff above the horizon and out to the horizon, which is of no value to us at all. And when we get over the target, we don't even get above it, and it's already disappeared through the window. So, we're having a real tough time here with this Earth obs and this attitude.

CC-H Okay, Deke. Copy. I did copy your conversation with Crip awhile ago. I've been here for about the last hour.

DMP Okay. I guess we propose to try another 20 degrees adjustment in pitch.

CC-H Now, do you mean a total of 20 or a total of 30?

DMP We took - It didn't seem too much; it was just obviously an improvement.

22 52 54 CC-H Deke, Houston. The only confusion I have on - on what you said was is that I thought you said that Vance had already tried about another 10 degrees down, and then you mentioned the 20 degrees. And I was wondering if you thought that a total of 20 degrees further pitch down or a total of 30 degrees further pitch down would be about as much as you could stand?

DMP I'm talking a total of 30. We tried 10, and we're still looking at a lot of stuff above the horizon. So we think another 20 on top of that might be about right.

CC-H Okay. Why don't you let our guys think about that, Deke, and we'll get back to you.

DMP Thank you.

CC-H Deke, Houston. You got a minute to talk?

DMP Yep.

22 54 35 CC-H Tell you what, we're going to look at the - We have another Earth obs pass coming up down here in just a minute and if we can gin up a - a new number for you before this Ascension pass, maybe we can update this upcoming P20 and you can give that a whirl and - and let us know how it turns out. For your information, it's printed in the Flight Plan, but we - we have no ATS coverage this pass and - due to the attitude constraints.

22 55 01 DMP Okay. Yes. We would have cranked in the 10-degree adjustment, but we only have 10 minutes of Hawaii to the West Coast and we didn't think that was enough to start experimenting.

CC-H Okay.

22 56 57 CC-H Apollo, Houston. We're about 1 minute from LOS at Newfoundland. I'll give you a call at - at Ascension at 130 plus 46. That's about 11 minutes from now.

23 08 42 CC-H Apollo, Houston. Ascension for 4 minutes.

CC-H Apollo, Houston. Ascension for 4 minutes.

CC-H Apollo, Houston. Ascension for about 3-1/2 minutes.

23 09 41 DMP Roger. We're reading you, Crip - Dick.

CC-H Rog. And I've got an update to the upcoming P20 for this Earth obs attitude, Deke, if you'd - if you'd like me to update that Flight Plan.

DMP Okay.

CC-H Okay. It's at 131 hours and 15 minutes.

DMP Roger.

CC-H Are you ready to copy?

DMP Ready to copy.

23 10 10 CC-H Okay. NOUN - there's one change. The NOUN 78, VERB 07 - VERB 25 NOUN 78, I want to change the middle number to read plus 06000. And that'll end up the three numbers will be plus all balls, plus 06 three balls, plus 18 three balls. Over.

DMP Okay. Copy. We got that one. Thank you.

CC-H And if you copied that, due to the data that we see here on the experiment, Vance, from the X-ray, we got a - a change in the pad we want you to do. Right now we would like - -

CMP Okay. Go ahead. - -

23 10 56 CC-H - - Okay. We'd like X-ray H - HIGH VOLTAGE POWER to OFF, now, down on panel 230. And I've got one write-in for you at 29 minutes.

CMP Okay.

CC-H And the write-in is just - write in there, "X-RAY HIGH VOLTAGE POWER to number 1 at 29 minutes." The rest of the pad remains exactly as is.

CMP Okay. Part of your "save the wear and tear" program? Huh?

23 11 27 CC-H No. Tell you what it is, we don't think we're getting good data on the X-ray. There's a very important target down there at 29 minutes. We're going to turn the HIGH VOLTAGE POWER, OFF, now, and turn it back to number 1 at 29 minutes, and the rest of the pad will make it all work. The reason we're not changing any of the interim part of the pad is we're also getting U - EUV data. Over.

CMP Okay. Understand.

CC-H Okay. Great.

CC-H Apollo, Houston. We're about 30 seconds from LOS. Orroral Valley comes up at 131 plus 22. See you then.

CMP Okay. See you there.

23 12 47 CC-H Okay.

CMP Hey, we're going over the Simpson Desert right now. And it's just fantastic. It's got dunes in it, it looks like, that are very long and they look like - -

23 43 22 CC-H Apollo, Houston. Orroral Valley for 3 or 4 minutes.

CC-H Apollo, Houston on VHF through Orroral Valley. How do you read?

CC-H Apollo, Houston. Orroral Valley.

23 44 33 ACDR - - better.

CC-H Apollo, Houston. Orroral Valley. How do you read?

ACDR Clear, how us?

CC-H I - I got a loud background noi - noise every now and then, Deke, but I read you loud and clear.

ACDR This is Tom, but the - the new attitude is lots better.

23 45 02 CC-H Hey. Very good. I've got a couple of things for you. First thing - I just - Since I didn't talk to you about it, I'm assuming that Crip had told you, do not activate the primary evaporator where it said in the Flight Plan and one came up there a few minutes ago. I just wanted to verify you didn't do that.

ACDR That's affirmative. We've left the evaporator off completely.

Day 201

CC-H Okay. Fine. And you can delete that. There's a couple of more places between now and the end of the day where it appears, and just - just pass those over. Also, I've got one change to the upcoming - EUV pad that you're going to be doing on rev 80.

CC-H Apollo, Houston. Do you read?

ACDR We're shooting pictures like mad. Stand by.

CC-H Okay. I tell you what. Let me just talk and you guys keep on. The - And I can get the rest of it up to you later. We're about 30 seconds from Orroral Valley. At the start of the X-ray upcoming EUV pad, delete X-ray ops, delete X-ray ops at 55 minutes. I'll tell you the rest later.

ACDR Delete X-ray ops at 55 minutes.

23 46 27 CC-H That's affirmative, Tom. See you later.

END OF TAPE

Day 202

TAG Tape 202-01/T-72

Time: 202:00:00 to 202:01:30

Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

00 24 49 CC-H Apollo, Houston. Bermuda for 6 minutes.

CMP Hello, Richard. How you doing?

CC-H Hi, Vance, how are you? I got cut off there and - I'm sorry I was interrupting you guys while you were taking pictures during that Earth resources pass. I think I got up the "Delete X-ray ops" for this pass at 55 minutes. I have one more change.

CMP Okay, go ahead.

CC-H Okay, down at the tail end of the pad at the time of 34 plus 55, I want you to do - in addition to the EUV powerdown, I want you to do an X-ray contingency powerdown procedure. It's in the Experiments Checklist, page 1-24. It's about a 6- or 7-minute procedure.

CMP Okay, I've got it. Seem to recall that from one of our sims.

00 25 45 CC-H Yeah, we're doing our best to get - to see if we can understand what's the matter with the X-ray. And we're going to sleep with - after you do the X-ray contingency powerdown, we're going to sleep with it in - in that configuration.

CMP Roger.

CC-H Also, Apollo, I have one change to the Flight Plan at about 32 - excuse me, 132 hours and 30 minutes or so; I want to delete the "WASTE STOWAGE VENT valve to VENT."

ACDR Okay, Dick, we have that.

CC-H Okay, thank you, Tom.

00 26 34 DMP And, Dick, as far as the last Earth obs is concerned, I think that attitude is much better than the previous time. We're going to keep running with it.

PRECEDING PAGE BLANK NOT FILMED 653

CC-H Okay, real good, Deke. We'll take that input and crank that into our planning for all the - all the other pads that are coming up.

DMP Okay.

CC-H I mean all the other passes that are coming up.

00 26 58 DMP Things are still moving mighty fast, but it gives you a chance to look at them fast in nadir, which we couldn't do before.

CC-H Okay, well, why don't we try that approach for a while? And if - if you have any other suggestions, just give them to us and we'll try to help you out.

DMP Well, we got to wish we had more film. It's very discouraging to have to stay within a film budget; there's so many interesting things to shoot.

CC-H Roger. Understand. Record them in your mind.

00 27 28 DMP Unfortunately, we have no other choice.

CC-H (Laughter) Roger.

00 29 13 ACDR Houston, Apollo.

CC-H Go ahead, Tom.

ACDR Okay, Dick, down in that - again in that same area - about 32:34 - it says, "Activate primary evaporator." They still want us to leave this one off, don't they?

CC-H That's affirmative. Delete that there where it says "Activate primary evaporator." And that's the last one of the day. We're going to leave it off.

ACDR Okay. We're going to leave it off all night, huh?

CC-H That's affirm. We're about - and, Tom, we're about a minute from LOS. Ascension comes up about 10 minutes from now at 132:19. See you there.

ACDR Real good.

CC-H And, per the pad, we'll probably get locked up on ATS before we get Ascension.

00 29 57 ACDR Roger.

00 46 35 ACDR Houston, Apollo. How do you read?

CC-H Apollo, Houston. Tom, I read you loud and clear.
How me?

ACDR Okay. Are we locked up on the ATS?

CC-H Yes, we are, Tom. We're talking through the
satellite.

00 46 48 ACDR Okay. I'll go ahead there and go to the stop,
REWIND, and COMMAND RESET.

CC-H Okay.

CC-H And, Apollo, Houston. When somebody gets a chance;
on panel 230, request UP TELEMETRY switch to RELAY.

00 47 12 CMP Rog. Tom's getting it right now.

CC-H Okay.

00 47 55 CC-H Okay. We've got our command in now; on panel 230,
request UP TELEMETRY back to UP TELEMETRY position,
that's the center one.

CMP Roger.

USA (Music.)

CC-H Holy mackerel! Why did the music stop?

USA (Music)

CC-H Sounds like you guys are having a party up there.
We thought you were working on this EUV pad.

CMP Well, we - we're trying to do both. We'll see how
it works out.

CC-H Roger. Hey, if Deke is listening, I had a comment
on his comment about the film.

CMP Okay. Stand by.

CC-H Okay.

00 50 43 ACDR Deke - Dick, he's inventorying the film. We'll just wait a couple of minutes on it, and then we can talk to you - you can talk to him.

CC-H Well, I tell you what, Tom, it wasn't that big of a deal, and I can just pass it on to you. He was commenting about the frustrations of having to live within the film budget when you saw so many things out the window on good passes that you'd like to record. I'd just wanted to remind you and make sure you hadn't forgotten, that there's four film magazines listed in the Earth Obs book under film budget on page 5-1. There are four - they're listed as Hasselblad PAO magazines. They're your choice as to what to use them on. The numbers are CX06, 7, 8, and 9, located in B-5.

00 51 26 ACDR We've already used those. (Laughter)

CC-H Roger.

ACDR One thing that we do have as a reserve, and we are getting quite a bit of things on targets of opportunity, is the little Nikon.

CC-H Roger.

CMP No, Dick, there's no party. We're just playing a little music to make the computer in the spacecraft feel at ease.

CC-H Roger. Understand, Vance.

01 04 07 CMP Houston, Apollo.

CC-H Apollo, Houston. Go ahead, Vance.

CMP Dick, right now, Tom's doing the contingency power-down, and there's a step that says - let's see - it says, "X-RAY COVER, OPEN. Verify." And, of course, it's CLOSED, and he wonders - wants a little advice on that.

CC-H Okay. We do want to open that cover, Vance.

CMP Okay.

01 05 58 ACDR Okay, Dick. Everything is done, except closing the X-RAY COVER. And we're in that 5-minute wait after the X-RAY LOW VOLTAGE POWER, ON.

CC-H Okay. Real fine, Tom. And we'll be watching you, too. Thanks a lot, Tom.

ACDR Yes.

01 06 37 CC-H And, Apollo, Houston. We're getting ready to start a dump now that you're through with that pad***

CMP Please repeat, Dick.

01 06 53 CC-H (Laughter) Okay. I was going to tell you that I might drop out for a second because we're getting ready to start a dump, but I dropped out in the middle of what I was saying because we started the dump, and now I'm back up.

CMP Okay.

CC-H And, Apollo, Houston. Vance, when you get a minute to listen, I had a comment to you about what you told us about the eddies that you saw out on the Pacific awhile ago.

CMP Okay. All right. Yeah, go ahead.

CC-H Okay. Farouk is here and we were talking to him. The question that he had that you might notice on future passes over the Pacific, if you see the same thing, was the color and the texture of the ocean down between the clouds, and he's interested there mainly in the sea surface conditions and not just the clouds. Thought you might - I have some news sometime later on this evening that I'll have available if you'd like to hear it. There's one item in here that I thought I'd read to you. It says an earthquake which struck an area of the western Pacific today prompted a tidal wave alert for parts of Hawaii but was later canceled. The University of California Seismographic Laboratory at Berkeley reported an earthquake registering a 7.7 on the Richter scale occurring at 7:50 a.m. Pacific daylight time, and

it was centered in the region of the Solomon Islands. The - for your information, the Solomons are about 2000 miles to the southwest of Hawaii. We did check with our recovery weather people just a minute ago, and it turns out that they have not seen any tidal wave action as a result of the earthquake, either at Hawaii or at Kwajalein.

CMP Yeah, that is interesting. We've been flying repeatedly over that area, of course. I don't know if you can see something like that from up here or not.

01 09 16 CC-H Rog. Yeah, you're not going to be flying over that direct area here in the next pass or so. I just thought you might be interested in that one.

CMP Yeah, that is very interesting. After our last conversation, I took distance mea - or size measurements on a few of the eddies we've seen, and seems like a typical size is 10 to 15 kilometers in diameter.

CC-H Okay. Copy.

CMP But we have seen some giant ones that would be tens of kilometers, so we'll try to look at them more closely in the future though, and see what the sea state looks like.

CC-H Okay, thanks a lot, Vance.

CMP Right.

ACDR Okay, and, Dick, do you want us to maneuver with this VERB 49 to our solar inertial plus-X forward sleep attitude now?

CC-H Stand by on that just a second, Tom, please.

01 10 50 CC-H Tom, in answer to your question, as soon as you get the X-RAY COVER CLOSED after your 5-minute wait, yeah, go ahead and do the maneuver.

ACDR Okay, that's coming up right now.

CC-H Yeah. I marked it, too, and I noticed it was very close to that.

01 11 23 ACDR And that X-RAY COVER is CLOSED.

CC-H Okay, Fine, Tom. Incidentally, while I'm talking to you and we're talking about maneuvering, I wonder if I could have a second. It appears that we're developing an imbalance in the propellants in quads Alfa and Charlie, and we think we can stop this imbalance trend by changing the - one jet configuration on panel 8. And that is in the roll jets, what we'd like to do is turn Bravo - correction, turn Delta 2 to MAIN A and then turn Bravo 2 to OFF. And of course, if you needed to get back to the nominal configuration due to some problem or forgot what it is, those little decals that mark - that is pointed toward B2 would remind you which one it was. And incidentally - -

CMP Okay. Understand, Dick. We'll - would you like to have us do that right now?

CC-H Yeah, what we'd like to do is go ahead and put D2 to MAIN A and B2 to OFF. And incidentally, for your information, we're not going to have to be switching these back and forth. This configuration is good for the SIM bay experiments.

01 12 35 CMP Okay, good. We have a Delta 2 ON and Bravo 2 OFF.

CC-H Okay. Real fine. Thanks a lot.

ACDR Dick, where are we at now? Are we heading across Africa?

CC-H No, you're on ascending pass; you're just crossing the coast of southwestern Australia. And - then you'll be, of course, crossing Indonesia. Then you'll get another long pass over the western Pacific.

ACDR Okay. Sometimes it's hard to remember where you're at - you're in and out playing with the UV attitude all the time.

01 13 47 CC-H Rog. Well, you guys move so fast, I'm not surprised.

01 14 06 ACDR Okay, we'll maneuver to the solar inertial attitude.

CC-H Okay. Fine.

01 16 30 CMP Hey, Dick, are you still there?

 CC-H Yes, we're here. Go ahead.

01 16 35 CMP Hey, we're going over the Simpson Desert right now.
 And it's just fantastic. It's got dunes in it -
 it looks like that are very long, and they look
 like road tracks, there are so many of them - like
 hundreds of parallel road tracks. And we'll comment
 on it in our usual fashion with the onboard tape
 recorder, but - -

 CC-H Yeah, okay. Thanks a lot - -

 CMP - - it's just plain spectacular!

 CC-H Roger.

 ACDR Yeah, and the long red streaks are matching about
 color 10, I would say, on Farouk's wheel.

 CC-H Okay. Thanks a lot for the input - wish I could
 see it myself. Beano and I are whipping out our
 color chart and seeing what color it is ourselves.

01 17 32 CMP This is one of those cases where there was light
 coming in the window, falling on the color chart.
 And that made it easy to use. Sometimes when it's
 in the shadow, it's hard.

 CC-H Roger. Understand. Incidentally if you ever do
 have a question about the chart or any comment on
 it, we've got one here at the console that's just
 about identical to yours, I think.

 CC-H And, Apollo, Houston - -

 CMP Very good.

 CC-H - - we're a couple of minutes from LOS. I'll give
 you a call at Guam at 133:01.

 CMP Okay, understand.

01 18 32 ACDR And some of those long streaks, those long sand
 streaks, could have either gone to the 9 - between
 9 and 10.

CC-H Okay, thanks, Tom. Is it - could you differentiate 9 or 10 A or B? They dark or light?

ACDR Now that the Sun gets on the wheel where I can see it, it was more like 9.

CC-H Okay.

ACDR Oh, I'm sorry. Okay. Be about like 9A.

01 19 01 CC-H Okay, thanks a lot.

01 23 41 CC-H Apollo, Houston. Guam for 7 minutes.

01 23 44 ACDR Okay, Dick. And right over this area, you can mark the GET's, a whole series of eddies - maybe 15 to 18 kilometers in diameter - just clumps of them.

CC-H Okay, copy.

ACDR We're using the Nikon to shoot it.

CC-H Okay.

CC-H And, Apollo, Houston. We'd like to ACCEPT, please, and we'll get - get up the evening loads here, the new state vectors.

01 24 10 ACDR You got ACCEPT.

CC-H Okay, thanks.

ACDR Houston, Apollo.

CC-H Go ahead, Tom.

ACDR Okay, we'll get these height measurements later on. We're getting such good - Earth observation data here, we'll just delay that. You'll get it on the VTR.

CC-H Okay, whenever you get a chance from now until bedtime. As far as flight planning goes, it's mainly your time, so just be sure you get it, please.

01 26 07 CC-H Apollo, Houston. The computer is yours. You can
go back to BLOCK.

01 26 11 ACDR Roger. Back to BLOCK.

01 29 12 CC-H Apollo, Houston. We're 1 minute from LOS Guam.
Rosman comes up at 133:32. See you there.

ACDR All right.

01 29 18 CMP Okay.

END OF TAPE

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

01 54 06 CC-H Apollo, Houston. We're AOS, and if you'll give us ACCEPT, we'll continue giving you our uplinks for the evening.

01 54 34 CC-H Apollo, Houston. MILA for 7 minutes.

ACDR Roger. Dick, how do you read?

CC-H Loud and clear, Tom. And if you'll give us ACCEPT, we'll continue giving you the evening uplinks.

ACDR You got it. Had one problem with the VTR. We got the DM height measurements, but every time we hit the TAPE motor DRIVE, we'd get a green light. When it went to the RECORD, both of - the green - the TAPE motor DRIVE would go out. We did a REWIND, and it - it was reading 555. And did a rewind FORWARD just for a second, and it went to 1800 and something. Vance will talk to you in just a second here.

CC-H Okay. We've got the right people listening, so we're standing by.

01 55 25 CMP Yeah. Well, all told, we didn't use the VTR more than 10 minutes probably. Deke turned it on for us, and when he turned it on it all worked right, both the HEAD WHEEL DRIVE and the RECORD light came on. And then sometime later, when we were changing personnel in the measurement, Tom noticed that both lights were out. At that point, we talked it over and decided we'd rewind it just for a second or two to see what happened. Hit the HEAD WHEEL DRIVE, then REWIND, then OFF again. And so on the meter up to 1850 something, I believe.

CC-H Okay. Stand by just a second. Hang on.

01 58 32 CC-H Apollo, Houston. One question for Deke about the VTR. Is there any chance that he recalls what the TAPE POSITION indicator was reading when he turned the VTR on the first time?

DMP Unfortunately, Dick, I didn't look at it.

CC-H Okay. No problem.

02 00 20 CC-H Apollo, Houston. We're about a minute from LOS, and we'll be seeing you when you get locked up on the ATS.

DMP Okay.

CC-H And, Apollo, Houston. We didn't quite get our loads in. If you'll leave it in ACCEPT, we'll finish when we get locked up on the ATS.

02 00 46 ACDR Okay. Roger.

02 06 07 CC-H Apollo, Houston through the satellite.

CMP Loud and clear, Dick.

CC-H Okay.

CMP Just having supper.

CC-H Okay. Real fine. Incidentally, we're having some comm problems in our ground gear. We do have air-to-ground voice, and I'm assuming we're going to keep it.

ACDR Hey, Dick; Tom.

CC-H Go ahead.

ACDR What do we hear from Overmyer these days in Moscow?

CC-H Well, as a matter of fact, I haven't talked to him this afternoon. Of course, I kept in touch with him, talking to him just about all the time when we were - y'all were docked up and during the rendezvel - rendezvous. I'm not sure when he's leaving and is going to be on the way back. I'll check.

ACDR Okay. Well, look, tell him "Hello" from all of us, and we sure appreciate his work and all those guys who worked at the Center over there for us. We haven't forgotten about them.

CC-H Okay. I - I'm - I was sure you hadn't, and I'll sure pass it to them. They have supported you in mighty long hours over there in the Moscow Control Center the whole time, as you know, and did a real fine job.

02 07 32 CMP You guys down there haven't been doing so bad yourself.

CC-H Thank you.

02 08 03 CC-H Incidentally, guys, either now or after you eat I have some news here if - if you'd like to hear any of it. No hurry. We still - got a good while before bedtime.

ACDR Okay. Yeah, go ahead now.

CC-H Okay. Nearly enchanted by the unique encounter in the sky, Pope Paul VI said today he became one with a multitude of men who watched the feat of Apollo and Soyuz in these days. The Pontiff spoke to a crowd of 5000 from the papal palace in his hilltop resort near Rome. Pope Paul, an - an admirer of space ventures, told of watching television and scanning the night's sky in the vain hope of having a direct glimpse of you and the Soyuz. He said, "We, too, our eyes dazzled by skylight or wide open toward the depth of nighttime space, will shout out 'Long live the heroic men of such a fantastic feat.' Man has won, and we cannot refrain from foretelling more wonderful advances in the dominance of nature beyond the heavenly sphere. Man will win." Also I have an article - a thing here that points out that except for the Apollo 11 first Moon landing, there are more reporters and press that are here in Houston accredited to cover the Apollo-Soyuz space flight than any other space flight in the history of - since we started. With a - -

ACDR Sounds great.

02 09 35 CC-H Roger. The - I - I'd like to just put in my own two cents. I think the press has given you a tremendous coverage - very fair coverage of both you and the Russian compadres. There are several members of Tass that have been here in Houston, and, of course, we've had a press contingent in Moscow. With a 10-day European trip coming up, the President relaxed over the weekend playing his favorite sports and getting to see the movie "Jaws." It was the last chance for the President to take time off before he departs next Saturday to visit four European capitols and attend the July 30th to August 1st European Security Conference Summit Meeting in Helsinki. The President also faces a busy week ahead in his battles with

Congress over oil price controls and restoring military aid to Turkey. He played 18 holes of golf at Burning Tree Country Club in - in suburban Maryland Saturday, then joined Mrs. Ford for a helicopter trip to Camp David in the evening. War-split Cyprus observed the first anniversary of its Turkish invasion today with rival rallies and speeches holding out little hope for a settlement of the conflict. Addressing thousands of Greek Cypriots in Nicosia, Cyprus President Makarios vowed an unending struggle until the island was united and free again. Mount Everest in one respect is no longer the world's highest mountain, the Smithsonian Institute scientists say. In fact, if you measure from the center of the Earth, it never was, the Smithsonian said in a statement today. The scientists have calculated that Ecuador's Mount Chimba - Chimborazo - I'm sure I'll get corrected on that pronunciation - situated in the Andes about halfway between Quito and Guayaquil, has a geodial height 7000 feet higher than Mount Everest. Apollo planner Werner von Braun said in an interview today that rocket fuel may provide a clean-burning substitute for gasoline in automobiles of the future. An ideal fuel would be pure hydrogen, which gives off pure steam rather than polluting exhaust fumes, von Braun told the West German news magazine today. However, hydrogen which powers our large rockets is very difficult to handle. It turns out that Mercedes-Benz has succeeded in building a transportable tank for hydrogen to power experimental autos. The real problem though is that a car just can't go very far on a tankful, von Braun said. In sports, the Astros dropped another game today to the New York Mets, 10 to 9. The Phillies defeated Cincinnati 11 to 4, while Atlanta beat Montreal in both ends of a double-header. The Giants edged the Pirates 2 to 1, and Chicago took Milwaukee 9 to 2. In the American League, Detroit over Kansas City, Oakland beat Baltimore, while Cleveland was defeating California, and the Yankees took Minnesota in the first game of a double-header. And the last thing I have in the news here is also in the sports scene. It turns out that Ralph and Ignacio scurried down 6-foot plastic tubes and crawled away with top honors over the weekend in the first Hawaiian cockroach racing festival. Some 2000 persons showed up at the park bandstand near Waikiki Beach to watch the competition sponsored by a local radio station and the City Department of Parks and

Re - and Recreation. Darryl Evora, 15 years old, picked up his champ, Ralph, at the festival's "Rent-a-Roach" booth. "The one I caught at home was too slow," he explained after Ralph streaked down his tube to victory. Remmy Remigio, 16 years old, borrowed a roach from a friend to run in the adult competition and christened his competitor Ignacio. He frantically tapped on the tube and urge Ignacio on and his efforts were rewarded when the roach abandoned his initial hesitation and scurried to victory. Evora said he would keep Ralph as long as possible with an outside chance that there will be a defending champion next year. We'll just have to see how long he lasts. And I like the last line the best. He says "Right now, I just want to take him home and show him to my mother."

02 14 09 CMP Sounds like a new sport is born.

CC-H Roger that. We've still got about 45 minutes left here in this ATS pass.

CC-H And, Apollo, Houston. We're through with the up-links. You can go back to BLOCK. We're going to be starting the DSE dump, so I may drop out on the comm here for just a second.

02 14 33 ACDR You've got BLOCK.

02 17 01 CC-H And, Apollo, Houston. I forgot to call you back, but I am GO for voice again. I'm standing by.

ACDR Okay. Thank you, Dick.

02 31 17 CC-H Apollo, Houston.

ACDR Go ahead, Houston.

CC-H Hey, Tom. I guess you guys are still in the end of your meal, but this is the last pass this evening. And what I'd like to - is - what I'd like to do is go through the things that I have and interrupt you here, and then y'all can get back and have it to yourselves. One thing we want to do is go ahead and get the VERB 74 done while Guidance is looking at this data, which he is now. And also, we'd like somebody to go to panel 400, the VTR, and turn the POWER - and verify that the POWER switch, the

TELEMETRY switch, and the INTERLEAVER switch are all ON, and we're going to look at the data; we think its possible that we may have been at the end - end of tape there. There have been some reports of the TAPE POSITION indicator jumping around during testing on the ground.

02 32 13 ACDR Okay, Dick. I'll go down and do that right now. You've got the VERB 74.

CC-H Okay. Another - another something that somebody could be doing would be give me a battery readouts and also, we'd like the quantity readouts on all four quads.

ACDR Give them a battery readout, and, Vance, you give them the quad readout.

02 33 01 ACDR Okay. I'm down here on the VTR, Dick; go ahead.

CC-H Okay. What we wanted - -

ACDR You want all three swit - -

CC-H That's affirm; all three POWER switches to ON.

02 33 12 ACDR Okay. TELEMETRY, INTERLEAVER, VTR's ON.

CC-H Okay.

ACDR And I read 8888.

CC-H Okay. We'll be doing some commanding there, Tom. So I may get back to you a little bit later on to do something else, but for right now, I don't need anything else down at the VTR.

ACDR Okay.

DMP Okay. Dick, you wanted batteries? We got 37 on C, same on BAT A, and PYRO A and B. Do you want the others? A is 35.2, and B is 36.6.

CC-H Okay. I got them, and now we'd like a quad readout if we could get it.

ACDR Okay, I can get it for you here, Dick. Just a minute.

CC-H Okay. Real fine, Tom. And, incidentally, we did verify that we were at the end of tape there on VTR.

CMP Okay. And, Dick, the quads quantities are 79, 87, 76, 83.

02 34 29 CC-H Okay. There's a couple of other things. If somebody would get out the Flight Plan, I've got some - a few minor changes to read up to you that are real early in the morning tomorrow. And also, it turns out with this steam duct problem that we have, that we - it's potem - it's possible that that could affect the relief capability of the CABIN PRESSURE RELIEF valve after looking at some of our drawings, and we can - we can - so - get an alternate relief capability by throwing two valves down in the docking module. So if somebody could go down in the docking module and - and throw a couple of them, I'll be glad to read them to you.

02 35 15 DMP Okay, stand by 1.

CC-H Okay.

02 35 30 CMP Okay. And I'm ready to copy anything else you might have.

CC-H Okay. Vance, do you have the Flight Plan?

CMP That - that's right.

CC-H Okay. Turn over to tomorrow morning at a time of 142 hours and 55 minutes, please.

CMP Okay. I've got it.

CC-H Okay. There in the P20 option 5, I've got the same change I had before, the NOUN 78 second number should be changed. It now reads plus 09 and three balls. I want to change it to read plus 06 three balls.

CMP I understand. Change 09 and three balls to 06 and three balls.

CC-H Okay. Right below, then, in Deke's column at about 143:05, the high-gain angles I want to change to pitch minus 7, yaw 323.

CMP Got it.

02 36 46 CC-H Okay. And while we're right there, on the next page at 144 hours and 40 minutes, there's also some high-gains listed under your column. I want to change them to read pitch minus 10, yaw 229.

CMP Copy.

CC-H Okay. Now if you'll turn back a couple of pages. During the sleep period - this is one I'm sure you probably won't need, but say at around 142 hours.

CMP Okay.

CC-H Okay. It turns out that we've released the ATS satellite during that whole rev, so you're going to have no ATS, and so that contingency comm attitude is not going to do you any good if you did need the ATS. Just for your information, the Soyuz - the orbit is right in there at 141 hours and 46 minutes.

CMP Okay. Yeah, that's good to have. (Cough) 140 hours and how many minutes?

CC-H Well, let's see. The word I had was a 141 plus 46. I also had a time when they would be on the parachutes, but I didn't write it down right here, and I don't have it right now.

CMP Okay.

CC-H Okay. How about - -

02 38 14 CMP 141 and 46.

DMP And that's divided ..., Dick..

CC-H Okay, Deke. Two valves: first, on panel 824, the PRESSURE RELIEF VALVE REFERENCE. I want to put that to VACUUM.

02 38 27 DMP Okay. PRESSURE RELIEF going to VACUUM.

CC-H Okay. And then on panel 828, LOW PRESSURE RELIEF valve to AUTO.

02 38 35 DMP LOW PRESSURE RELIEF to AUTO.

CC-H Okay. That's all there is on that one. Let me check down the list and make sure - see what I've missed.

CC-H Okay. One thing that I was real concerned about last night, and I'm not sure - exactly what configuration y'all were in, but I gave you a couple of calls. I think you were still up, probably had off your headsets. We - we just wanted to make darn sure that when you do do the presleep checklist that you make sure that - that either somebody is on a headset or that one of the speaker boxes, the one probably in the command module, I guess, would be turned on with the volume up and not on full decrease.

02 39 35 CMP Okay. We'll try to make sure. I think we had a good configuration last night. Wasn't aware that you were trying to call us.

02 39 42 CC-H Well I - I - this morning when you - when Crip woke you up he - I was just handing over to him, and I - I agree with you. I was pretty sure we did, and I heard you get up at the right time. But I - right after the scheduled sleep period, I did call you and didn't get a response, and I just worried about it. You - you might write yourself a note. You know, in the presleep checklist on page 1-49, the comm configuration is listed there, but it says, "Required for joint operations only." And it has to do with panel 10. You might just delete that joint ops note there, and just put down there, "Verify speaker box on or somebody wearing a headset."

CMP Yeah, that's - we understand that. And that's how we did last night. Perhaps the volume wasn't up enough to wake us up.

CC-H Okay, incidentally, since Tom called awhile ago, we talked to the specialist team that's in Moscow. It turns out they'll be departing there on Wednesday, and - which - which is going to be coming up shortly, of course, and each heading their own way back to Houston. And they've really appreciated - -

ACDR Okay, good.

CC-H - - and they certainly appreciated your words.

02 40 54 ACDR Roger. Thank you for relaying that, Dick.

CC-H Okay.

CC-H Okay. A couple of more minor business things. One thing that we think, there might be an outside chance that it would help us in getting the steam duct thawed out would be to open up the door that is in front of the LiOH canisters and get a piece of gray tape or something and just leave it open and let some warmer cabin air filter back in there behind - in that area.

CMP Okay, that's open up the door at panel 350.

CC-H Okay, and here's one last note, back again on the vis obs film. I think you already are quite aware of this, but I'm going to tell you anyway. There are thr - there are three black camera magazines that, according to our records, because of past cancellations in Earth - Earth obs, that have extra frames if you haven't already used them. They are CT05, CT06, and CX13.

ACDR We were more concerned, Dick, about the silver camera film. And we've inventoried that since the last time we talked to you, and we got about 5-1/2 mags of that left. So we're - we need four by our records. We're still in good shape, I think.

CC-H Okay; real fine. We won't worry about it.

02 42 30 ACDR Say, Dick, one thing I want to do, too. We don't want to bring back one frame unexposed, so we're going to shoot up all that bank - a lot of it will be on outside and - just check, if there's anything that - that they've got in there that couldn't be used for outside using the light meters onboard the camera. Over.

02 42 54 CC-H Tom, I'm not sure I understand the question, and I'd like to make sure I pass it on properly. I - I realize you are going to try to shoot it all up, but say again the question, please.

02 43 06 ACDR Yeah; okay. We're going to shoot up all that Nikon film, and a lot of it's going to be used for outside viewing. And I just wondered it - you might check - No - nothing time critical - just check tomorrow to see if there's any film that wouldn't be suitable for it. And we're going to be using the light meter onboard and Has - the Nikon.

CC-H Okay - -

ACDR Typical example - example, Dick - -

CC-H Yes, I understand now, and we'll get our camera people to take a look. And if they have any advice in the morning, we'll get it up to you.

ACDR We've got the camera here right now, for example, with a CII18 with ASA 500 film in it, which is for the crystal growth of the ZFF. And we're using that also for Earth obs whenever we see something interesting.

CC-H Roger. Understand.

02 44 10 CC-H Incidentally, I - I think I got this up before, but if I didn't, it turned out the VTR was at the end of tape, and INCO has been commanding it. And we think probably that that was just anomaly because of the end-of-tape condition. We'd like you to leave the VTR POWER switches ON tonight and we're going to clean off the tape recorder during the evening. And it'll be all set to go in the morning.

ACDR All righty. Real good. Well leave them ON, and I guess you could command them OFF at the end, right?

CC-H Well, we - we don't mind - the answer to your question, Tom, is no. We can't command the POWER off, but we will clean off the tape and leave it at the end - at the beginning, and - and we don't mind leaving all three POWER switches ON all night. No problem.

ACDR Yeah. All right. Okay.

02 45 17 CC-H Okay, that's the end of my long list. Thanks for putting up with it. We still have about 13 minutes here, and I'll be standing by until the end of the ATS pass.

CMP Very good. Thank you.

CC-H Okay.

02 49 18 ACDR Houston, Apollo.

CC-H Go ahead, Tom.

ACDR Yeah, what terrain are we crossing over right now? Over.

02 49 30 CC-H You're on an ascending pass at about 10 degrees south, and you're getting ready to cross the - the islands out in Indonesia.

ACDR Oh, okay.

CC-H And the pass after - after you cross all those islands chains out there, Tom, you're going to be out over the Pacific all the way out, and then you'll see - start a descending pass and cross over the western United States over Oregon, the State of Washington. And - and as a matter of fact, you're going to come fairly close to Houston on your - on your descending pass coming down this way.

ACDR Okay.

02 50 39 CC-H Incidentally, Tom, one of the nicest things - things that's been happening to our shift on - on this mission is that the EECOM's back room has been fixing a real fine meal for us right now, and you might not believe it, but right now we're having cheesecake in the MOCR.

ACDR ... (Laughter)

CMP Didn't know Cy was a cook.

CC-H Well, this is - this is Charlie Dumis' group here.

CMP Okay. Well, I didn't know that Charlie was, either.

CC-H Well, they have outdone themselves, we ate spaghetti tonight.

ACDR Al Bean must be around there someplace.

CC-H You guessed it. He's the guy on duty (laughter).

02 56 19 CC-H Apollo, Houston. We're coming up on about 2 minutes before ATS LOS for the last pass of the day. One thing we were curious about was did you ever talk to Soyuz on FM today - this morning.

CMP No, we didn't, Dick. No, never did.

CC-H Okay.

CMP We - we never - we never got cranked up to hear them mainly because, for the first 3 hours, we were too busy to think about it, and I guess after that, why, just didn't think we were that close to them.

CC-H Yeah, okay. Well, I was just wondering. We had talked about it a little bit yesterday and they're - as far as I know, they're doing real fine, and they'll be - by the time you wake up in the morning, they'll be safely back home again. Incidentally, the wake-up call in the morning is Vanguard at 142:45, which is right at the scheduled time for the end-of-sleep period. And we're going to be saying goodnight here, so we'll see you in the morning.

ACDR Okay.

CMP Very good, see you in the morning.

02 57 31 CC-H Okay.

END OF TAPE

Day 202

TAG Tape 202-03/T-74
Time: 202:03:00 to 03:12
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

REST PERIOD - NO COMMUNICATIONS

PRECEDING PAGE BLANK NOT FILMED

Day 202

TAG Tape 202-04/T-75

Time: 202:10:05 to 202:11:30

Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

11 07 52 CC-H Apollo, Houston through Vanguard for 5-1/2 minutes.
Good morning.

CC-H Apollo, Houston through Vanguard for 5 minutes.
Good morning.

ACDR How do you read, Bo?

CC-H Roger. We read you fine. We're just looking at
the TV here and see that Soyuz has landed safely,
and Alexey and Valeriy were outside of the space-
craft and seem to be in good health.

ACDR Oh, very good. Give them our best. Sure glad to
hear everything went good.

CC-H I've got some Flight Plan changes that I'd like to
start on as soon as someone has a - a chance.

ACDR Could you give us a couple of minutes? We're just
barely starting to move here.

ACDR Stand by. I might be able to get a headset. Hang on.

CC-H Okay.

ACDR Okay, Bo. Go ahead.

11 10 39 CC-H Okay. The first one is at 143:15, and it concerns
the waste water dump. We'd like you to dump the
waste water to 40 percent. That's a 9-minute dump.
We suggest timing the dump since the transducer has
been erratic.

ACDR Okay. 9-minute waste water dump at 142 - 143 ...
Roger.

CC-H Tom, I think I heard you say that correctly, but
you came through very weakly. Could you repeat it,
please?

ACDR Roger, Bo. Waste water dump, 9 minutes; 143:15.
We'll time it.

CC-H Roger. The second one is at 144:40, and that's
change the high-gain angles to minus 4 and yaw 312.
And that's a change to the change.

ACDR Roger. Minus 4 and 312.

11 12 13 CC-H At 144:45, perform the X-ray contingency prep in
the Experiment Checklist, page 1-25.

ACDR Give me the page again, too.

CC-H That was page 1-25.

ACDR Got it.

CC-H Okay. And there's less than a minute until LOS,
and we'll see you at ATS at 143:07.

ACDR Roger. 143:07. And I guess the - the angles at
143:07 are minus 7 and 323. Okay?

CC-H That's affirmative. Minus 7 and 323.

ACDR Okay. And we'll check on how our water boiler's
doing with you then. Okay.

11 13 14 CC-H And just as we go over the hill, everything looks
fine. We still have live TV from the Soviet Union
in Kazakhstan where the spacecraft has landed, and
we saw it touch down. Saw the cosmonauts get out
and everything looks good.

ACDR Okay.

11 29 25 CC-H Apollo, Houston through Santiago and then ATS. Over.

CMP Loud and clear, Bo. Good morning.

CC-H Good morning, Vance. I still have some more Flight
Plan updates for you. If you could get out the
Flight Plan Supplement and - if anybody's there, I
can continue with some on the Flight Plan.

CMP Okay, stand by 1.

END OF TAPE

Day 202

TAG Tape 202-05/T-76

Time: 202:11:30 to 202:13:00

Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

11 37 33 ACDR Houston, Apollo.

CC-H Apollo, Houston. Go ahead.

ACDR Okay. We got the WASTE WATER DUMP going. And we're timing it.

CC-H Roger.

ACDR And, Bo, does it look like we could use that evaporator to boil water today? Over.

11 38 03 CC-H Well, we're going to want to keep the evaporator shut down until the evaporator activation at 149, and that was one of the Flight Plan changes that I was going to give you.

ACDR Okay.

CC-H And how is the vehicle? Is it comfortable?

ACDR It's a little warm in the command module.

CC-H Understand.

ACDR We do have the VTR OFF as per the Flight Plan, now.

CC-H Roger.

CMP Okay. Ready to copy your changes now, Bo.

CC-H Okay. Do you have the Flight Plan Supplement out, Vance?

11 38 39 CMP That's correct.

CC-H Okay. E - rev 88 EUV pad.

CMP ...

CC-H That's on page 6-15.

CMP Okay. Got the rev 88 EUV pad.

CC-H Okay. The time on it is 145:25:23.

CMP Roger. 145:25:23.

CC-H And I'd like you to add a - a step at a DET of 46, X-RAY HIGH VOLTAGE POWER, OFF.

CMP Roger. At 46 minutes, which would be at the end of the pad, X-RAY HIGH VOLTAGE POWER, OFF.

CC-H Negative. That would be 46 - that would be between 44 and 58 in a count up sequence.

CC-H Do you have that, Vance? I'm sorry - it ways, set DET, 37, 44, and then I'd like you to stick one 46 in between 44 and 58.

CMP Okay. I just glanced at it and saw there were two places where you could put that and I chose the end of the pad. Sorry. Okay. Stand by.

CMP Okay. Go ahead.

CC-H Okay. And at 58, delete the X-ray - and do the EUV as scheduled.

CMP Roger. Delete X-ray, do EUV.

11 41 37 CC-H Down about three-quarters of the way at 25:43, delete the X-ray powerdown.

CMP Roger.

CC-H On EUV pad 89, the time will be 146:54:13.

CMP Okay. That's EUV pad, rev 89, 146:54:13.

CC-H Roger. And that's all I have in the Flight Plan Supplement. Now go back to the Flight Plan.

CMP Okay.

CMP Bo, I'd like to verify that water dump's 9 minutes.

CC-H Roger. Water dump is 9 minutes.

CMP Okay. Proceeding along.

11 45 09 CMP Bo, how do you read?

 CC-H Go ahead. I read you fine.

 CMP Did you have some more of the Flight Plan that I
 can copy?

 CC-H Roger. I do. This would be at rev 88 - rev 87, 88,
 page 4.3-27.

 CMP Okay.

 CC-H I already told Tom, the high gain in the middle of
 the page is pitch minus 4 and yaw 312. At 144:45,
 X-ray contingency prep, page 1-25. At 45:10 - -

 CMP We have that.

 CC-H - - at 45:10, scratch out "Deactivate primary evapora-
 tor," and add "BMAG number 1, WARMUP."

11 46 09 CMP Okay. At 145:10, scratch "Deactivate primary evap,"
 add "BMAG 1, WARMUP."

 CC-H Roger. And if you'll turn the page now.

 CMP Go ahead.

 CC-H About a third of the way down, right after the EUV
 scratch out "Activate primary evaporator."

 CMP Got it.

 CC-H And add "BMAG number 1, ON," and that should be at
 146:02. And this is the start of the ATM. That's
 prior to the VERB 49 maneuver, BMAG number 1, ON.

 CMP Okay. At - 146:05, scratch out "Activate primary
 evap," and at 1 - 146:0 - 05, scratch out "Activate
 primary evap." And at 146:02, add "BMAG 1, ON."

 CC-H Roger. And then we'll be working on this ATM, and
 that VERB 48 should be - change it to "60102, 01111."

 CMP Okay. This is up at 146 about, and it's VERB 48
 maneuver 60 - the DAP is 60102 and zero and four ones.

11 47 51 CMP Roger. And there's - there's all - there's already one in the Flight Plan at about 146:03.

CMP Yeah, we have it.

CC-H Okay. And now that VERB 49 maneuver that says "VERB 49 maneuver to target 365A attitude" is going to be moved down to 146 up 37. That's after the ATM burn, and will be the VERB 49 maneuver to target 365A - 178.10, 037.60, and all zeros.

CMP Okay. So that VERB 49 maneuver is okay as is, except we change the time of doing it, which goes down to 146:37, was that?

CC-H Roger. Right after the burn.

CMP Roger. Got it.

CC-H Okay. And instead of the maneuver, there will be a maneuver to the ATM burn pad attitude.

CMP Okay.

11 49 22 CC-H At 146:17, there are high-gain angles, and change them to pitch, minus 22; yaw, 305.

CMP Minus 22 and 305. And where - and that puts that maneuver to the burn attitude then at - right after you turn on BMAG 1.

CC-H Roger. That takes the place of that VERB 49 maneuver to the target 365 attitude.

CC-H And at 146:36, perform the burn.

CMP 146:36; perform burn.

CC-H Roger. And I already gave you the 146:37, which is the maneuver to the target 365A attitude.

CMP Roger.

CC-H At 146:40, VERB 48:611; 1, 01111.

11 50 45 CMP Okay. After the burn, go back to a slow DAP maneuver rate, which is 61101 and the same 01111.

CC-H Okay. And then inhibit all jets except Dog 1, Dog 2, Alfa 3, Charlie 4, Baker 3, and Dog 4.

CC-H And you'll notice there that we're using the Dog 2 instead of the Bravo 2, and that's to conserve quad B propellant.

CMP Okay, after that - -

CC-H Say again.

CMP After that, inhibit all jets - to read back, after that, inhibit all jets except D1, D - or Delta 1, Delta 2, Alfa 3, Charlie 4, Bravo 3, Delta 4.

CC-H Roger. And then go to the Flight Plan Supplement, rev 89.

CMP Okay.

CC-H And we thank that the waste water dump is about finished now.

CMP Okay.

11 52 23 CC-H And at 146:26, there had been that VERB 48, and that's to be deleted.

CMP Stand by 1.

CC-H Go ahead. Standing by.

11 53 58 CMP Okay, Bo. Why don't we hold off on these Supplement Flight Plan additional changes until Deke gets his morning report worked up. He's got that right now. And did you have something else in the detailed - or in the Flight Plan?

CC-H No. I'm sorry, Vance. I understand what you said. When I said go to the Flight Plan Supplement, rev 89, that was supposed to be the last part of the procedure that I was reading and not a direction for you to do now.

CMP Okay. Okay, well, let me copy all that down again then. I would - I had to run off and do something else just as you gave that.

11 55 49 CMP Houston, Apollo.

 CC-H Go ahead, Vance.

 CMP Okay. Once again, the very last thing, where you refer me to some place in the Supplementary Flight Plan. Would you give me that word for word at the time it's supposed to be?

 CC-H That was at 146:40, after you have inhibited all the jets except - then just proceed and go to the Flight Plan Supplement, rev 89.

 CMP Thank you.

 CC-H And just to make sure we've got this straight, let me just start on the - start from the top on this ATM maneuver.

11 56 35 CMP Okay, I - I think we - I've got it. Let me read it all back to you. That'd be better.

 CC-H Fine.

 CMP Okay. Starting about 146:02, we're going to turn BMAGs ON, we're going to maneuver - these are just the changes - we're going to turn BMAG 1 ON, maneuver to the burn attitude for ATM. That's a pad. After that, we'll go down to antenna, which is minus 22 and 305. Then at 146:36, we'll have the ATM burn. Immediately after that, we'll do the maneuver that was up at 146:04 about, which VER - VERB 49 maneuver to target 365A. Then after that, VERB 48, put in the slow maneuver rate DAP, 61101. Inhibit all jets except, then go to Supplement Flight Plan, rev 40 - or rev 89.

11 57 54 CC-H Roger. The only thing that I didn't hear this time was the DAP change, and that's immediately after turning those BMAG ON. 60102, 01111.

 CMP Rog. We have that, too, and I forgot to give it to you. Okay, we got it.

 CC-H Okay. At 149:02.

 CMP ...

11 58 44 CMP Go ahead at 149:02.

 CC-H Roger. There's maneuver to a vis obs attitude. We would like to change R to - of the NOUN 78 from plus 09000 to plus 06000, and that's so that you can have the better attitude to look out the window.

 CMP Roger. Copy.

 CC-H And we'd like you to put a little box around that "Activate primary evaporator," because that's the only one we want you to do this morning.

 CMP Okay. At 149, we'll emphasize by a box that we do do that activation.

 CC-H And because you changed your attitude at 149:31, change the high-gain antenna angles to minus 12 and 336.

11 59 46 CMP Minus 12 and 336. At 149:31.

 CC-H Roger.

 CC-H And on that pass at 150 hours and 17 minutes, we'll probably lose ATS.

 CMP Okay.

 CC-H And, that's all I have for the Flight Plan. The next one is in the Experiments Checklist.

 CC-H And, we're going to lose you for a couple of seconds while we make a mode change.

 CMP Roger.

 CC-H And, Vance, if you're digging for books, I'm going to be giving you the ATM in the Updates Book.

 DMP Stand by 1, Bo. We're scrambling around here.

 CC-H Roger.

12 02 51 DMP Bo, while we're scrambling for books, I could give you a morning report here if you want it.

CC-H Roger. Ready to copy the morning report.

DMP Houston, how do you read?

CC-H Read you loud and clear, Deke. Go ahead with your morning report.

12 03 15 DMP Okay. Yesterday was day 6. And let's see the AC had everything for breakfast with tea added - sugar and lemon. Okay. For lunch, he didn't use the chicken salad, and he added cheese, tea, strawberry, pecan cookie. Evening: no cherry-nut cake, added a bread and cheese, and a tea. Got all that?

12 04 00 CC-H All breakfast. Lunch: chicken - chicken salad, cheese, tea, strawberries, and pecan cookies. And, dinner: no cherry-nut cake; he added cheese and tea.

DMP Roger. Okay, PRD, if you're ready for that.

12 04 33 DMP Tell me when you're ready, Bo.

CC-H We're listening. But I did not hear the PRD.

DMP Okay. I was waiting for you to switch pages. Okay. It's 11009, 7 hours good, no medications, and a full tank of water.

CC-H Roger. 11009, 7 hours, no medication, and a full tank of water.

DMP Rog. Okay. CP menu.

CC-H Go ahead.

CMP Everything - everything for breakfast. Scratch the ham for lunch; add a tea and cookie; add a cheese for dinner.

CC-H For dinner, that was an add or subtraction of the cheese?

DMP That was an add.

CC-H Okay.

DMP And his medical report. You ready?

CC-H Ready.

DMP 48216, 7 good, and 70 seconds. He must have a lousy PRD or else absorbing the radiation at a much higher rate than the rest of us are.

CC-H Understand 48216, 7 good, and 70 seconds.

DMP Rog. Okay. Then the DP. Everything for breakfast; scratch the salmon for lunch; ate that as a snack. Okay, leave it on. And in the evening, scratch the macaroni and cheese and the chocolate-nut cake.

CC-H Got it.

12 06 23 DMP Okay. And the medical report. Okay. PRD is 61008, 7 hours, excellent sleep, and about 40 swallows of water.

CC-H Roger. Sounds as if everybody slept good last night.

DMP Sure did; super.

CC-H Great.

DMP Yeah, the old DM's cooling down pretty good now, Bo, so we're getting some cool flow up there. I usually sleep there and Vance in the tunnel and Tom down here with the hoses blowing, so it works out pretty well.

CC-H Did - did I actually wake you up this morning?

DMP You actually did.

CC-H Great.

ACDR Yeah, I had a scramble to answer you before you went over the hill.

12 07 22 CC-H Good sign.

12 08 05 DMP Say, Bo. You had some changes to the experiments there.

CC-H Roger. On the Experiments Checklist the - that's page 1-8, and it's modification to the ETE procedures for sample number 1.

DMP ...

CC-H Apollo, Houston. I did not hear you. Did you say you had it ready?

DMP Telling you to stand by. That's in a separate book - we've got to get it.

CC-H Sorry.

ACDR Did you have anything for the main experiments book while we're looking for that? We got the main one out.

CC-H No.

ACDR All right, Bo. Roger; go ahead.

CC-H No, I don't have. I've got something to the Earth Obs Book.

DMP Okay, fine. Go ahead and give Tom the Updates Book then.

12 09 08 ACDR I'm ready to copy on that maneuver, Bo.

CC-H I'm sorry. We don't have the maneuver ready for you yet.

ACDR Oh, okay. ... do you have any stuff for the update book?

CC-H We will have the maneuver for you very shortly, and it - then it will go in the Update Book. But we don't have it right now.

CMP All righty.

ACDR Okay, Bo. I've got the Earth Obs Book here.

CC-H Okay. This is for rev 88, site 8D.

ACDR Okay. Target 8D, rev 88.

CC-H Roger. Dam site 2 nearest the center of the window at 144:44:48. And that's approximately 15 degrees south of nadir.

ACDR Hang on. I need a different pencil to write in this book.

12 10 39 CC-H Yeah, I see. I didn't try to write it on mine, either. I see what you mean.

ACDR That was 144:44:48? Over.

CC-H That's affirmative.

CC-H And on site 8E -

ACDR Got it.

CC-H Okay. Structure number 1 time, 144:49:36, and that also is 20 degrees south of nadir.

ACDR Got it. 144:46:36; 20 degrees south of nadir. Okay.

CC-H And structure number 2 time is 144:49:15, and that also is 20 degrees south of nadir.

ACDR Okay. Got that. 144:49:15 and also 20 degrees south of nadir.

CC-H Roger.

12 12 13 ACDR Hey, Bo. Tell Farouk right now wherever our position is, we're passing over some tremendous sand dunes. They've got long ridge dunes, and on top of them are little bitty - are big stars. I mean, they are big babies. It's like in a - nearly a sedimentary basin. I don't know where we're at but I just wanted to report that at this time. It's 143:50:30.

CC-H Roger. And it looks like you're over - like North China.

ACDR Okay.

CC-H It's just off of the big board.

CC-H And vis obs copied all that.

12 13 15 CC-H And, Apollo, Houston. Just a little weather report. It's a little cloudy at the start, rather clear over South America. It should cloud up across the inner ITC, and then it should clear up again until you get up into Europe just south of the Alps.

DMP Okay. Okay. And I got the ET - ETE Experiments Checklist.

CC-H Okay. Modification to ETE procedures for sample 1. Experiment Checklist page 1-8, and that's step 5.

DMP Okay. Got it.

CC-H Okay. When the AC observes sample 1 at 60 minutes, perform the following: If the front band has advanced to the 110-millimeter mark, then proceed to the ETE freeze procedures immediately. If the front band has not advanced to the 110 mark, then proceed nominally, which is to reset the portable timer to 15 minutes, and then after 15 minutes, do the ETE freeze procedures.

DMP Oops. You better give me all of that again, I don't write that fast.

CC-H Okay. At 60 minutes, perform the following: the front - -

DMP Okay. That's on what sample?

CC-H That's on sample number 1.

DMP Sample number 1. Okay.

12 14 59 CC-H If the front - -

DMP ...

CC-H If the front band has advanced to the 110-millimeter mark -

DMP Okay.

CC-H Then proceed to ETE freeze procedures immediately.

DMP Okay.

CC-H If the front band has not advanced to the 110-millimeter mark, then proceed nominally.

DMP Okay.

CC-H Which means that you reset the timer for 15 minutes and then do a freeze. And what it means is that we're leaving the STDN out of this call. You don't have to call down to us. You just look at it, and if at 60 minutes you're past 110, you go ahead and freeze it; if not, you wait another 15 minutes and then freeze it.

DMP Okay.

CC-H One other item is that we do need to know where the band is.

DMP Okay.

CC-H And I have one circuit breaker call. That's all the - that's all I have for the Experiments Checklist.

ACDR Okay.

12 16 59 CC-H I have a circuit breaker call, and it is to take the 100 WATT - 100 WATT HEATERS OFF and put the 50 WATT HEATERS ON, and that is on panel 226; circuit breaker O₂ TANK 100 WATT HEATERS, 1 MAIN A, OPEN; O₂ TANK 100 WATT HEATERS, 2 MAIN B, OPEN.

12 17 38 DMP Okay. Bo, give me that again. It's O₂ TANK 100 WATT HEATERS, MAIN A and MAIN B, OPEN. Right?

CC-H Roger. 1 MAIN A, OPEN, and 2 MAIN B, OPEN.

DMP Got them.

CC-H And then O₂ TANK 50 WATT HEATERS, 1 MAIN B, CLOSED, and 2 MAIN A, CLOSED.

CMP Okay. I've got those.

CC-H Thank you.

DMP All right.

CC-H And I've got one note, and we'll - it'll probably cause a few changes later, but right now it's just a note. And that's camera number 4002, the color wheel is stuck. Black and white are okay currently in the

DM on panel 871. And number 4009 won't hold the color sync; the black and white is okay. That's currently in the DM, and we think you've put it on number 873.

DMP Did that switch around per your request yesterday?

CC-H Roger. The thing is, it looks like we've got another camera that's not giving us good color.

DMP Okay.

DMP Give me the serial numbers, Bo, again so we can double-check those.

12 19 01 CC-H Number 4002 and number - and number 4009.

DMP Okay. 4002 should be on 871, and 009 on 873. The 873 is the better of the two, I gather.

CC-H And we'll have a mission note for you later on what to do exactly with those cameras.

DMP Okay.

CC-H And that's all we have. I'm sorry for disturbing your breakfast, though. And there are just 2 minutes until LOS but we'll pick you up shortly at Guam.

12 20 01 DMP Okay.

12 22 57 CC-H Apollo, Houston through Guam for a little over 6 minutes. Standing by.

DMP Okay.

12 28 44 CC-H Apollo, Houston. There is less than a minute until Guam LOS. We'll see you at Vanguard at 144:19. That's a little different than what is shown in your Flight Plan because the ship is steaming.

CMP Okay. Hey - and Bo, I was off the line when you were telling Tom about the splashdown of Soyuz today. I'd sure be interested to hear what it was like and how everybody looked when they jumped out. Maybe the - -

CC-H They had a helicop - they had a bunch of helicopters following them with TV cameras. And we saw them on their one great big chute, coming down, you know, it looks kind of like a diving bell. And just before they hit the ground, there was a big cloud of dust. Must have been where the rocket fired. And then the dust blew away, and they settled down quite - looks like quite nicely. When the people got to them, they got out and stood up, and both of them waved. And so they looked like they were in good health and good spirits.

CMP Sounds great.

12 29 45 CC-H And we're just about going LOS here.

12 40 57 CC-H Apollo, Houston through Vanguard for just a little over a minute. Santiago at 144:37.

ADCR Roger, Bo.

END OF TAPE

Day 202

TAG Tape 202-06/T-77

Time: 202:13:00 to 202:14:30

Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

12 59 57 CC-H Apollo, Houston through Santiago and then ATS.
ACDR Okay, Bo. Read you 5 by.
ACDR Houston, Apollo.
CC-H Apollo, Houston. We read you loud and clear. Go ahead.
ACDR Okay, Bo. I'm starting this Earth obs pass. Okay, we're off a couple of minutes on the GET from what they're lined up, but I'll - I'll talk to you later. I'm busy now.
CC-H Okay.
CC-H Apollo, Houston. We'd like ACCEPT if someone has a chance.
13 01 17 ACDR Got ACCEPT; we're running P20.
CC-H Roger. ACCEPT, and it won't hurt.
CC-H Apollo, Houston. We're finished with the computer; you can go BLOCK.
13 02 54 ACDR Okay.
13 12 08 CC-H Apollo, Houston. We'd like the X-ray contingency prep started so that we can get our X-ray cal in at the proper time.
ACDR Okay.
13 15 00 CMP Houston, Apollo.
CC-H Apollo, Houston. Go ahead.
CMP The X-ray contingency prep has been completed. Would you just remind me what getting the BACKUP PURGE to OFF does?

CC-H That pressurizes the detector. You see, last night we had the detector venting, and so now we've repressurized it, and then we're going to do a calibration here and turn the - after that, turn the HIGH VOLTAGE POWER, OFF, and evaluate the data and decide what they're going to do with the X-ray.

13 15 40 CMP Okay.

13 27 02 CC-H Good morning, Apollo. The Amber Team's with you, and I need somebody to dig out the Updates Book so I can give you the - the pad for this trim maneuver we got coming. I know everybody's pretty busy. I was wondering if Deke has a - has a moment.

ACDR Okay, just a second. Since you're on the ATS, just stand by for a minute and we'll finish this pass, and then we'll be with you.

CC-H Okay. Our problem is that we're going to - soon as you finish this pass, basically, we're going to initiate a maneuver for this EUV and we're going to lose comm shortly.

DMP Okay. Give it to me, Crip.

CC-H Okay. I under - understand you've got the - got the Updates Book out?

DMP That's affirm.

CC-H Okay. Coming at you with NOUN 33, 146:36 all balls; minus 007.4 all balls, all balls; 182, 329 - -

DMP Okay, hang on a second.

CC-H Okay.

DMP Yeah, ... Stand by 1.

13 28 17 CC-H I'm sorry. What you need is one of the P30 pads - maneuver update.

DMP Yeah, that's what I had, but it started floating off here and I lost you. Okay, start over again, please.

CC-H Okay. Starting out again with our NOUN 33's:
146:36 all balls; minus 007.4, all balls, all balls;
182, 329, 355; 007.4; 00:37. Readback, please.

DMP Okay, 146:36 all balls; minus 007.4, all balls, all
balls; 182, 329, 355; 007.4; 00:37.

CC-H That's a good readback, Deke. And down in the re-
marks, I'd like you to add, "Bypass the P41 attitude
maneuver. Do two-jet, minus-X. Set delta-V counter
to 100.0" - and the delta-V counter will count up,
of course, to 107.4.

DMP Okay. Bypass P41 attitude maneuver, two-jet, minus-X,
delta-V to 100, should count up to 107.4.

CC-H Okay, fine.

DMP Incidentally, you're getting cut out again today by
some tower down there.

13 30 19 CC-H Copy. Are you flying with VHF FM on now?

DMP Negative.

DMP And, Bo, I had the FM off, and I've had the power
down in the DM since yesterday or the night before
yesterday.

CC-H Copy. Incidentally, one other item on this. We're
not going to have a - an opportunity to give a - to
give you a load for this maneuver or this burn, and
it's going to be - have to be loaded manually.

13 30 51 DMP Okay. No problem

13 31 46 CC-H Apollo, Houston. Vance, or whoever's performing it,
we've had a little problem there with that call, and
we need somebody to move a switch for us down there,

please. We need to take the - on panel 230, we need to take the X-RAY PURGE switch to the CAL position, down.

CMP Okay. Did it once; will do it again.

CC-H Rog. We - we copy.

13 32 12 DMP Okay. I just went to CAL on her, Crip.

CC-H Thanks a lot, Deke.

CC-H We're going to lose you here shortly and have you again at Orroral in about 33 minutes.

13 34 20 DMP Okay.

14 05 34 CC-H Apollo, Houston. We're AOS through Orroral. We have you for about 3 minutes.

CC-H Apollo, Houston. How do you read through Orroral?

CC-H Apollo, Houston. How do you read through Orroral?

14 08 15 CMP Houston, Apollo. Reading you weakly.

CC-H Roger. Read me any better now?

CMP Little better. What's up?

CC-H Oh, not much. Need to get a couple of items. We saw an MC&W just before we lost you awhile ago, and we couldn't determine what it was here. Can you enlighten us a little bit?

CMP We haven't seen one. You caught us by surprise.

CC-H Well, it must have been a data glitch down here then or something if you guys didn't get it. Only other item - well, if we could get the POTABLE WATER INLET valve CLOSED, we would appreciate it.

CMP Okay. I'll close it for you. Anything else?

CC-H Well, whenever we can work it in, we would like to get the results of the last P52 you did.

CC-H That probably was recorded over on the previous page
of your checklist there - on your Flight Plan, rather.

ACDR How do you read now, Crip?

CC-H Loud and clear, Tom. But we're about to go over the
hill here at - at Orroral. I'll just go ahead and
get you at - on the next ATS pass. We'll pick - -

ACDR Okay - -

CC-H - - up the P52 there.

ACDR - - Crip. Well, the P52 went real good. No problem.

CC-H Okay.

14 09 56 CMP And POTABLE WATER INLET's CLOSED.

14 09 59 CC-H Okay. We'll - we'll see you at Quito in about 28
minutes.

END OF TAPE

Day 202

TAG Tape 202-07/T-78
Time: 202:14:30 to 202:16:00
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

14 38 28 CC-H Apollo, Houston. We're AOS at Quito; we've got you for about a minute and a half.

CC-H Apollo, Houston. AOS Quito for 1 minute.

ACDR Roger. Copy. Hear okay. (Music)

DMP Hey, Crip. Just a quick data report on the furnace. It was 492 on that last sample.

CC-H Deke, you're so weak, I can hardly read you.

DMP I said the temperature in the furnace prior to helium inject - -

CC-H Yeah. I - comm does - seems to be very poor right now, so why don't we wait until - a little while until we get through and I'll get your furnace report there.

14 39 44 DMP Okay.

14 45 13 CC-H Apollo, Houston. We're talking at you now through the ATS. Got you for 52 minutes.

CC-H Apollo, Houston. We're with you through the ATS.

USA ... (Music)

CC-H Apollo, Houston. I can hear something very faint in the background but - unreadable.

14 46 17 CMP Roger. How do you read now?

CC-H Oh! Loud and clear, Vance.

CMP Okay. We're all set, coming up for our RCS burn. Just crossed over the Andes and the Amazon. Amazingly clear day over the Amazon.

CC-H Great. Sounds like a pretty view. Vance, would you - do you got - do you have time to give me that P52 results, just to give us a quick idea what the platform looks like?

CMP Yeah. Tom's getting it right now.

CC-H Also, where you normally might go ahead and give us - turn the tape recorder on, the high bit rate and so forth for a burn - we do not want to do that one for this one. It would perturbate our scheduling over the DSE for the experimental stuff.

CMP Okay. Understand.

ACDR Okay, Crip. Ready to copy?

CC-H Yes, sir. Shoot it to me.

14 47 15 ACDR All righty. First star is 06; second, 15. NOUN 05: all balls, plus 14.8, minus 18.7, minus 12.8. And torqued at GET 144:31:00

CC-H Roger. Was that Z component minus 10.8?

ACDR Minus 12.8.

CC-H Okay. Copy. Thank you.

CC-H Incidentally, you probably already noticed on the - on the burn there - we're doing it in this attitude of minus-X because it is pretty close to the next attitude that we have to go to for the EUV pad coming up. Didn't think you'd mind a little eyeballs out there.

ACDR Oh, no. No problem. Good way to balance up the quads, too - ... there.

CC-H Rog.

14 48 43 CC-H Apollo, Houston for Deke. You were trying to give us some comment about - about the furnace awhile ago, through Quito, and we couldn't read you there. And we're - be glad to get it if you could give it to us now.

DMP Okay, Crip. I just wanted to give you a report on the temp on the furnace. And it was 492 prior to helium injection. (Music)

CC-H Okay. Thanks a lot. Appreciate it.

Day 202

DMP Sure.

CC-H Yeah. That all looks good. That is about what we were predicting it would be.

14 49 18 DMP Okay.

14 55 54 ACDR Okay, Crip. We're coming up to 2 minutes on the burn.

CC-H Roger that. We're standing by here. We're now looking at playback data from the tape recorder, so we haven't got you real-time data. We will have it just as soon as we get AOS Madrid, which is about a minute from now.

14 58 04 ACDR And we're burning.

CC-H Copy.

14 58 43 ACDR Okay, there we are, Crip; Zero, minus 1, and plus ...

CC-H Roger.

14 59 03 ACDR And the EMS reads 107.8.

CC-H Copy that.

CC-H Very good. That should put you right down in the middle come Thursday.

ACDR Sounds great.

15 01 42 DMP Hey, Crip, would you say we were about over the straits of Dover now?

CC-H That's affirmative.

DMP Okay. Great. We got a picture of it, then.

CC-H Okeydoke. We would advise if we can go ahead and get this VERB 49 maneuver in, probably need to get it - get it started to get there in time for the EUV pass.

15 02 04 ACDR Okay. It's in work, Crip.

CC-H Okay, fine. I also need to update you on this upcoming EUV pass. We want to delete the X-ray ops out of it because of our problem with the instrument. Also, we want to do that same thing on rev 90. I'll - if you want to pull out your supplements and make notes on those, I'll stand by to repeat them.

15 02 30 ACDR And we're maneuvering.

CMP Stand by.

CC-H Copy.

CMP Okay. We got it out.

CC-H Okay, fine. It - on both of these pads, rev 89 and EUV, we just want to delete X-ray ops. Also the same for rev 90.

CMP Okay. Done. Too bad. Does it look like we'll be using that instrument a little later?

CC-H We're - we're still investigating it. We'll get back with you on that. I might - one comment I might make is that it's a really important science day from the standpoint of the other two instruments, both EUV and helium glow, we've got some of their highest priority revs and targets upcoming. In fact, I believe this one that you're doing now has - it's about the second highest priority with one of the highest priority targets involved. We had a problem last rev that we still don't understand. We're trying to take a look at it in that we didn't get - didn't get all of the data recorded on that DSE and that we're not sure whether it was a problem we had here or - or something involved there. Just want to alert you to it, and if y'all can be very careful on the DSE procedures that you've got there to ensure that we're going, we would appreciate it.

15 03 59 CMP Okay. Did it seem to be a question of timing or just that it wasn't - -

CC-H Yes. It - -

CMP - - gathering data or something?

CC-H - - it - if you look back at that last - last rev 88, it would appear that you had a DET time of starting the thing on the DSE at about 33, and we got that last portion of the pass but we didn't get the - the initial one where - which - where - you were supposed to start it at - at zero.

CMP Okay.

ACDR Okay, Crip. We have a checkoff list we're using, and that thing is checked off.

CC-H Rog. We're - we're not sure exactly where the problem was, Tom; I assume you guys are being very careful with it; I was just alerting you that we had had the problem here so we can continue to be so.

15 04 56 ACDR Rog. I understand.

15 09 22 CC-H Apollo, Houston. In looking over your configuration following that burn there, we show that BMAG 1 is still ON, and we need that turned OFF, please.

15 09 30 CMP Okay. Coming OFF.

15 26 18 ACDR Hello, Houston; Apollo.

CC-H Go ahead.

ACDR Well, we're right on schedule, and all the maneuvers are going good. Are you getting good data? Over.

CC-H I believe so. Let me reverify that.

CC-H That's affirm, Tom. We are getting good data. Looks real good.

ACDR All right.

CC-H I was just sitting down here being quiet to stay out of your hair.

ACDR Thank you for the compliment.

CC-H Anytime, anytime. You really are sharp up there today.

ACDR Oh, we feel great, Crip. Everything's going good.

CC-H Great. That's good to hear.

15 28 56 ACDR Okay, Crip. Looking forward to 21:12; that's theoretically when we should lose ATS, and that's when we verify that tape motion. Over.

CC-H Roger. And, of course, just before we go over the hill there, Ed will put in a command to get the thing initiated for you.

ACDR Right. And we'll recheck it.

CC-H Rog. Just in case we miss it, that's why the verify's there.

ACDR Okay.

CMP Go ahead.

ACDR How's Ben Franklin doing down there these days?

CC-H Oh, he's just having a ball pushing all these buttons - trying to get all this data in.

ACDR I can tell. Yeah, I can tell. (Laughter)

CC-H It's a pretty - pretty challenging mission for INCO here in this latter part of - the mission.

ACDR Yeah, I can imagine all it takes to get this data back there.

15 30 04 CC-H The EECOM also thinks it's pretty challenging trying to get his water boiler going right.

15 31 22 CC-H Tom, R1 there should be 169.10; we see it 169.00.

ACDR Thank you, Crip.

CC-H Just to show we're not totally asleep.

ACDR Yeah, I don't know how I missed it. Maybe I didn't hit the 1 button hard enough, and it got out in zeros.

CC-H Yeah. And with all those numbers on there, I don't see how you keep them all straight anyhow.

ACDR Yeah, this is really a two-man job to coordinate the cross-check here.

CC-H Roger that.

15 35 40 CC-H Apollo, Houston. We're about ready to lose you here on the ATS, and we'll see you in a couple of minutes - oh, actually, about 5, I guess, through Orroral for a short pass.

ACDR Okay. Thank you, Crip.

15 39 19 CC-H Apollo, Houston, talking at you through Orroral. Got you for a little over a minute.

ACDR Okay.

CMP Roger. Reading you weak, Crip.

CC-H Okay; fine. I've got you loud and clear right now.

CC-H Apollo, Houston. If you read me well enough - Well, we're just about to go over the hill. We'll see you at Quito in 30 minutes.

ACDR Okay. Anything you need real fast?

CC-H I was going to give you the DET time to count it to on rev 90, which is over on another - the next page here of 148:23:01, if you want it.

ACDR That was 148:23:01, right?

CC-H That's affirmative.

ACDR Got it.

15 40 51 CC-H Okay; thank you.

END OF TAPE

Day 202

TAG Tape 202-08/T-79
Time: 202:16:00 to 202:17:30
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

16 13 22 CC-H Apollo, Houston. We're AOS through Quito for about a minute and a half.

ACDR Roger, Crip. We're ... leg volumes; still have Deke to go - -

CC-H Apollo, Houston. You're breaking up. Stand by 1.

16 13 54 CC-H Apollo, Houston. We'll have you in MILA in a couple of minutes. Why don't we stand by and - maybe get a little better there.

16 15 43 CC-H Apollo, Houston. We're now talking at you through MILA. How do you read?

ACDR Rog. I read you loud and clear, Crip.

CC-H Okay. I got you the same now.

ACDR And we're already in the attitude to start the next EUV and again to reverify, that's at 148:23:01.

CC-H That's a good readback. That is correct. And we're sitting here looking at your attitude, and it looks good.

ACDR Okay. Yeah, everything should have been perfect on that last one; hope you got a good data.

CC-H Okay. Hope so, too. We're working on a little plan here - it looks like with minor impact - to recover that - that data that we lost earlier. And one item, I guess, if you got a few minutes here, I can talk to you about, Tom. If you flip your Flight Plan over to the next page, at about 149:25 or so, we've got an X-ray cal called out there.

ACDR Okay. Stand by.

16 17 02 ACDR Roger.

CC-H Okay. What we'd like you to do is, we're going to delete that cal and, instead, we're going to have you do a - kind of a little special procedure, which is

a very - couple of switch throwings to activate the evaporator, and it's a non - normal activation, and I'll call them out to you when we get AOS through MILA. I would also, contrary to what I believe Bo told you earlier this morning, like to delete that activating the primary evap under 149 hours, under Deke's column.

ACDR Okay. We'll delete that now.

ACDR And we'll pick up on your directions through MILA. We have ATS to follow that, about activating the evap rate on your instructions.

16 17 50 CC-H Okay. Real fine. Thank you very much.

16 27 05 ACDR Crip, how do you read through ATS?

CC-H Loud and clear. How me?

ACDR Loud and clear.

CC-H I expected you guys were all busy getting your leg volumes out of the road, so I was being quiet again.

ACDR Yeah. I'm trying to get a quick shave in here between now and when we start punching that DSKY again.

CC-H Right. Got to look pretty for the - for the TV, I guess.

ACDR I haven't even looked that far ahead.

CC-H Well, I don't even know if we've got any coming up.

ACDR I haven't had time to shave for 2 days, so I'm finally doing a little bit.

CC-H All right. Got to keep that military appearance.

ACDR Right.

ACDR Okay. I'm going off the headset.

CC-H Understand. You're going to take your headset off. Gene said he'd be glad to set some TV up for you if you wanted it.

ACDR I don't - I don't think so right now.

16 28 15 CC-H I didn't think so, either.

16 33 10 CC-H Apollo, Houston. Wonder if the DP's got a moment to let me bend his ear, regarding upcoming vis obs observations for his next pass?

CMP Just a second, Crip. We'll ask him to get on a headset.

CC-H Okay. Vance, were you the gent that requested some information regarding 35-millimeter film and how to use the Nikon for targets of opportunity?

CMP I think Tom asked that last night. He was essentially wondering if we needed a special - oh, sort of additions to the photo ops cue card on light settings, f-stops, et cetera, or if we could just use the light meter in the Nikon, as is?

CC-H Yeah. I think we told him that - -

CMP For outside.

CC-H Yeah. I think we told him that he could use the light meter, but I did have some additional information; I can just give all of that to Deke -

CMP Okay, I'll tell him.

16 34 44 CMP It'll be a couple of minutes before he can get up. He's kind of busy now, Crip.

CC-H Okay. There's no rush at all. I was just - any time that's convenient for you guys to talk about it. One of the things that I was going to talk to him about, Vance, was - I think you had talked to Farouk, premission, regarding some of Cousteau's sea-farming sites. And I was going to tell him where one was in the Adriatic Sea, so that he might be able to get it. We're going to be coming over it next rev, and he's going to be doing some of vis obs, anyhow, so he might be able to get a shot of it.

CMP Oh, hey! That'd be nice. Glad to hear we can do something in that area. Deke'll - when he comes up, then he can copy the location.

CC-H Yeah.

DMP Hello, Crip, how do you read?

CC-H Loud and clear, Deke; how me?

DMP 5 by. Give me about 30 seconds; I'll be ready to copy.

CC-H Okay - -

CMP I'll leave the ETE open.

DMP Okay, Crip. I'm standing by. And the status on the ETE, it's up and running. And the freezer plug came out very fine this morning, back in again, no problem, everything looks A-number-1 on that experiment at this point.

16 36 41 CC-H Great. Really glad to hear that. What - we had a couple items of interest on - that you might be able to do something about, on this upcoming pass that you're going to have. One of them is that - we've had a rather large oil slick, about 40 miles long and 5 miles wide, reported about 50 miles east of Key West. And we think that that probably should be visible from the number 1 window in the command module, when you come across there on the next rev.

16 37 15 DMP Okay. That's 50 west of Key West.

CC-H East. East of Key West.

DMP Okay. 50 east.

CC-H Okay. And we're - it's going to be available to you just about - oh, part of that red tide area, when you come across - about the same area, there. Just a little before it.

DMP Okay.

CC-H Okay. The other one was - -

DMP ...

CC-H Okay. The other one was that - I think Vance had asked Farouk to look into talking with Captain

Cousteau regarding some sea-farming sites. And we got some data back that one of them is going to - that he's considering this on the eastern edge of the Adriatic Sea. And you're going to be coming across it. And it should be visible from number 3 window, on rev 91, at about 149:44 GET. And you can take a look at your book at target 9J and at least get an idea of the area by the Adriatic.

16 38 24 DMP Okay. Rev 91, 149:44, to 9J - and what was the window number?

CC-H Window number 3, the big one there.

CC-H Okay. The other item was that - because Tom had talked to the ground yesterday, regarding use of the Nikon, since you guys were getting a little bit short on film there, for targets of opportunity. Basically, we're telling you you need to use the photo cue card, but I've got some recommendations, if you want to copy them down.

DMP Okay. Go ahead.

CC-H Okay. Recommend using the 300-millimeter lens, although some of the problems we've had from Skylab indicates you might - that might end up blurring a little bit, but we can try it. We recommend a shutter speed of 1/1000. And for your CI film, your interior film - use your exterior photo cue card, table Bravo, but increase each setting by one f-stop. For example, instead of - if it calls for f/8, we want you to use f/11. And for CS film, Charlie Sierra, we want you to use table B directly.

16 39 52 DMP Okay.

CC-H Okay. And if you have a chance to record any of your photos on your voice record, we would appreciate it, also.

ACDR Okay, we've been doing that.

CC-H Yeah. I thought you probably were.

16 40 04 CC-H And that's - that's all I was holding for you right now; let you get back to - to observing the world.

ACDR Okay. Fine; appreciate that. Probably good to have it here - it just seems like about the time we get ready for a good old ZFF or crystal growth is when we see the exciting things. And of course, we're obviously out - way out of configuration there, but those ...

16 40 26 CC-H Okay. Hang in there and keep after them.

17 08 30 ACDR Houston, Apollo.

 MCC-H Go ahead.

 ACDR Okay. I guess we'll be losing you shortly, and that's when it calls out at 27:06 to verify the DSE tape motion?

 CC-H That's affirm.

 ACDR And I hope the data's coming in good for them.

 CC-H It is still looking good.

 ACDR Okay.

 CC-H Okay. We're about ready to go LOS through the ATS and next station contact is quite awhile away, be through MILA in about 37 minutes, that's at 149:24. See you there.

17 09 55 ACDR Okay, Crip. Take her easy.

END OF TAPE

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

17 47 11 CC-H Apollo, Houston. We're AOS through MILA and with the ATS we should be with you about 58 minutes.

CC-H Apollo, Houston. If you're reading through MILA, we're ready to - soon as we get data locked up here pretty good, we're ready to proceed with that primary evaporator activation, as we discussed earlier.

CMP Okay, Crip.

CC-H Incidentally, Vance, since I heard you there, on your exercise, we would like to wait until we get locked up through the ATS there about - oh, about 10 more minutes before we - I'm sorry, about 5 more minutes before we begin exercise.

CMP Okay. And I'd like to be a little late on that. I'll get it in before the end of ATS. But right now I'm helping Deke on this vis obs. Turns out to be kind of a two-man task.

CC-H Okay. We copy that. Incidentally, we do not show the WASTE STOWAGE VENT valve opened - which we need it for the purge. It's called out a few minutes - few minutes earlier.

CMP Say again.

17 48 32 CC-H The WASTE STOWAGE VENT valve needs to go to VENT.

CMP Okay. We purposely held off on that to clarify or make sure you wanted that done. And - so we'll - we'll get that little section done right now.

CC-H Okay. When you can work it in there.

CMP Crip, I'm going to have to off headset to get these things. I'll just activate - I'll just take care of that - vent section of the Flight Plan there and activate the primary water evap.

CC-H Negative. Negative on the activation - I've got - I want to do it special so I - you can do it if you let me give you the procedures.

CMP Okay.

CC-H Want to make sure that the GLYCOL EVAPORATOR WATER FLOW is in OFF, which is where it should be. Want to take the STEAM PRESSURE to MANUAL, and STEAM PRESS, we want to go to DECREASE for 10 seconds.

CMP Okay.

CC-H And if you do that, we'll sit here and watch you for about 10 minutes before we go to AUTO on those valves.

17 49 58 CMP Okay. WATER, verify OFF. Go to MANUAL, DECREASE for 10 seconds.

CC-H That's affirm.

17 54 13 CMP Okay, Crip. Procedure on the water evaporator and the others on the vent have been taken care of.

CC-H Yeah, we - we're watching our data here. Saw you do it, Vance.

CC-H Did you - you got the WASTE STOWAGE VENT valve open, I understand.

CMP That's right.

CMP Houston, Apollo.

CC-H Go ahead, Vance.

17 57 01 CMP Just one question about the Adriatic - that's going to come up here later this - visual obs. Understand which side of the Adriatic and both north and south and east and west way.

CC-H Okay. The word that we're getting, it's on the eastern edge of the Adriatic and, basically, it's that - the whole eastern edge along - along Italy there.

CC-H I'm - I'm sorry - -

CMP Eastern edge is not mentioned - -

CC-H I'm - I'm - I'm sorry. Yes, on the opposite side along Yugoslavia, across through there.

CMP Okay.

DMP What specifically are we looking for?

CC-H Okay. That's just an - an edge of - of the sea that - that is considered a high potential for sea farming.

DMP I see.

17 59 07 ACDR Houston, Apollo. I got the Doppler - activated and warmed up at 149:26:00.

CC-H Copy that. Thank you very much for that report, Tom. That's - as you're aware - is sort of time - critical later on and we need to make sure it gets properly warmed up. Appreciate your telling us.

ACDR Right.

DMP Okay. And the Earth obs guys may be interested in knowing that we've just seen some icebergs here in the Labrador Current north of Newfoundland.

CC-H I copied about seeing some icebergs and I didn't get the rest of it.

17 59 39 DMP Yeah. They're in the - what we think is the Labrador Current, north of Newfoundland.

CC-H Copy that.

DMP Whether they're bergs or ice cakes, I guess we'd be hard put to say, but they're very visible at least from this altitude.

CC-H Very good.

17 59 56 ACDR And, Crip, the Marshall people would like to know that when the 60 minutes were up, the first band had progressed from 118 to 123, so we put it right away into the freeze cycle. So it's electrophoresing away.

CC-H Okay, real fine. Appreciate that report also.

DMP Crip, I forgot to - tell you that we did not see the oil slicks you talked about, east of Key West. I think we're too far north for one thing; and secondly,

there's a cloud cover all over the west coast of Florida and pretty much over the state.

CC-H Okay, I was afraid that was too much of an oblique angle for you to get a shot at it. We thought - take a look at it anyhow. It was pretty - reported to be a pretty good size.

DMP I see.

18 02 00 ACDR Hey, Crip. On that ETE, the first band was stopped at 60 minutes. The first band went from 118 to 122 millimeters; the second band, from 87 to 99 millimeters. The column voltage was fluctuating around 009. Over.

CC-H Okay. Copy.

DMP You might also pass on to Farouk that we have not seen any red tide west of Florida because of the cloud cover, and the same up in the New England area. We - Cape Cod was clear and we got some good pictures there, but everything north of that, from our angle, was cloud covered and - so we've seen nothing in those other sites.

CC-H Copy. Too bad.

18 02 48 DMP We should have some beautiful coverage of Cape Cod, however.

CC-H Rog.

18 03 58 DMP And also for the Earth obs guys, the North Atlantic is also mostly cloud covered. We see a lot of interesting cloud features and practically nine different current and eddy patterns, but we just didn't want to waste film on that. We have not seen any oil slicks. Lots of airplane contrails, however.

CC-H Roger.

18 07 27 CC-H Apollo, Houston. We've been sitting here watching your evaporator. We think it's in pretty good shape right now, and we'd like to go ahead and go - WATER FLOW to AUTO and STEAM PRESSURE to AUTO, if somebody's got a chance to work those switches in.

18 07 41 ACDR Okay, I'll get it.

CC-H Okay, Tom. Appreciate letting us know when it happens and we're also assuming that when Vance gets ready to - to get started on his exercise here, he's going to give us a holler so we can go into proper data mode.

ACDR Okay, he's working on it - getting it. This Earth obs is nearly a two-man job, I'll clue you. Okay, STEAM PRESSURE coming to AUTO. H₂O FLOW coming to AUTO.

18 08 08 ACDR Mark it. Okay. You got STEAM PRESSURE, AUTO, and H₂O FLOW, AUTO.

CC-H Okay, thank you.

DMP Okay, Crip. You still read?

CC-H I'm sorry. Missed that last comment.

DMP I say, if you're still reading, we just went down the Adriatic coast there, and - getting into problems. One, what we can see is cloud covered and - we can't see very well on account of the oblique angle. It's clear, but it's such an oblique angle, we weren't able to tell anything.

18 09 05 CC-H Okay. Copy.

18 12 12 CC-H Apollo, Houston. For the CP. Vance, we got about - oh - about 25 more minutes here available through the ATS for - for your exercise, and anxiously awaiting it.

DMP Yeah. He's - he's getting some of it right now, trying to get up to do it.

CC-H Okay.

18 12 45 CC-H Apollo, Houston. It looks like we didn't make it on that primary evap, and we want to go ahead and deactivate it.

DMP Stand by. We're in the middle - -

ACDR Just a minute. Vance is in the docking module, I'm in the middle of freezing the electrophoresis, and Deke's in Earth obs. Stand by.

CC-H Understand.

CC-H When you can get to it.

18 13 21 DMP I'm afraid the old Greek gods are getting to us today on the Earth obs, Crip. I'm supposed to be over the Red Sea, which I'm sure we are, looking for bioluminescence. But, unfortunately, what wasn't factored in here is that we're still in sunlight and I got the sunshine nice and bright right in the window.

CC-H Rog. Yeah.

DMP I'll hang in here until it sets and see if I can see anything, but I'm not optimistic.

CC-H Yeah. It looks to me like - -

ACDR Okay, Crip. What - -

CC-H Tom.

ACDR - - what switch do you want to shut down this thing?

18 13 51 CC-H Okay. We want - WATER FLOW to OFF, and that's in center position, and go to INCREASE for - MANUAL and INCREASE for 1 minute, please.

ACDR Okay. That's just a standard shutdown I'm doing, then.

CC-H That's affirm.

18 14 12 DMP Okay, Crip. Wherever we are, I've got a series of very bright lights down here. A pair to the right, a pair directly under the nose, and a set of three ahead of me. Looks like they're under a bit of a cloud, but they're superbright. Must be gas fires, maybe.

CC-H Probably - you're coming just about over the Suez area at this time.

DMP I see. Okay. And it's clear off to the left, and we can see forest fires off there. But these probably are gas fires.

18 15 08 ACDR Okay. STEAM PRESSURE has been INCREASED for 1 minute and that does it. Anything else you want?

 CC-H No, that should do it for a while. We thought we got it cleared up there, but apparently we did not.

 ACDR All right.

18 18 35 CMP Houston, Apollo.

 CC-H Go ahead, Vance.

 CMP Okay. I'm on biomed on the center seat CCU. You picking me up?

 CC-H Let's take a look at it.

 CC-H Let us get configured here for you, Vance, and we'll tell you when to cut loose.

18 19 19 CC-H CP, Houston. We're looking at you now; proceed on with the exercise.

 CMP Okeydoke.

18 20 04 CC-H CP, Houston. Vance, the data is getting pretty - pretty garbled here, and we would request that, if you could, to recheck your electrodes.

 CMP Okay. Any one in particular?

 CC-H No. We recommend you just go ahead and try them all, right now. Just try pressing them down.

18 21 26 CMP Okay. Is that any better? If not, I'll try again.

 CC-H Stand by 1, Vance.

 CC-H Okay. That's looking good to us, Vance. Let's try it once more.

 CMP You say it is looking good?

 CC-H That's affirmative.

 CMP Okay. We'll exercise.

18 24 14 CMP What's the heart rate, Crip?

 CC-H Well, let me ask our friends over here.

 CMP Hope it didn't go down.

 CC-H (Laughter) If it went down - I don't think it did.

18 24 33 CC-H About one-half a minute ago, it was 113.

 CC-H Work hard!

 CMP That means work harder.

 CC-H Roger.

18 25 06 CC-H It just went to 101. You're not complying.

 CMP I'm trying, Crip; I'm trying.

 CC-H (Laughter) I suspect that you were.

 CMP Funny thing - you can work a sweat up, up here, and
 work your muscles, but it is hard to get your heart
 rate up with this gadget.

 CC-H Yes, sir.

 CC-H And while you're working away there, if the AC has
 some time, after he finishes up with this ETE ops,
 I was going to try to - to do a little bit of an
 update. We were going to do to - or we're going to
 request to do - to recover this data that I mentioned,
 that we'd earlier lost due to our tape recorder pro-
 blem.

 ACDR Okay. Wait - wait until E - we're in the middle of
 messing with the ETE.

 CC-H Okay, that's fine.

 ACDR I got you.

 CC-H We'll get it there.

18 29 29 CMP Houston, Apollo.

 CC-H Go ahead.

CMP This turns out to be a pretty fair leg exerciser. But really, the bicycle ergometer's the first-class way to go, like they had on Skylab.

CC-H Rog. For your information, we got your - saw your heart rate up to 125 at one period, there.

18 29 52 CMP Okay. Also, this just exercises certain muscles. I have the feeling that I could probably jump tall buildings after this, but possibly not walk, be - be able to walk.

CC-H (Laughter.) Roger.

CC-H You going to put a big "S" on your chest?

CMP I'd better not.

CMP Okay, Crip. Guess I'll clean up and get ready for lunch. How's that?

18 31 21 CC-H We'd like to - if you'd keep the OBS on there a little bit and just let us look at a minute or so of your recovery there, we'd appreciate it.

CMP Okay.

CC-H Is Deke tied up there right now? There was one item I wanted to mention to him sometime.

DMP Go ahead. I'm working on restowing the freezer here, but I can listen.

18 31 44 CC-H Okay. All it was is that we - I was noticing in your book here, you've got - check the biostack in a few minutes. And the PI was getting a little bit concerned about his battery on that particular item and if - when you look at it, if the light is OFF, we would like you to go ahead and turn it OFF at this time. If it's ON, we want to leave it ON.

DMP Hey, could you - -

ACDR Yeah, while I'm waiting for that sample to unfreeze, I can get up and look at it. Just a minute.

18 32 30 ACDR Okay. On the biostack, the light is ON.

CC-H Okay. Well, just leave it ON. And believe the next time you check it is when you go ahead and turn it OFF normally, and that will be - about 154:10. Fine. Thank you very much.

ACDR Right.

DMP And, Crip. For those of you that have tried to stow this freezer in one g, you should try it in zero g. It's really sporting.

CC-H Well, I tell you, it was - it was fun enough in one g. I don't know what it would be like at zero - trying to get that - get that little foldover thing there to stay in the right position. I thought it'd be a little bit easier in zero g.

DMP Well, I was hoping so, too. But what happens is it keeps floating out of there, of course - -

CC-H Yeah - -

DMP - - hold it in position.

DMP We got her.

CC-H Very good.

CMP Houston, Apollo.

18 35 04 CC-H Go ahead.

18 35 07 CMP Be nice if you'd remind us, sometime in the future, when we're to come over the Adriatic area again in the daytime. We might have a little better viewing condition.

CC-H Okay. We'll look ahead in your Flight Plan there and see if we can pick out a good one for you, Vance.

CMP Okay. Thanks a lot.

CC-H Apollo, Houston. For the CP. Vance, we've - see your heart rate's all down, and you look nice and comfy now, and we've seen enough data. You can go ahead and take the OBS off.

CMP See you later. Thanks.

CC-H Okay. We're about ready to go over the hill on the
ATS and **next station contact will be at Vanguard** in 17
minutes. That's at 150:33. 150:33. See you there.

18 37 47 CC-H And if Vanguard turns out to be a comfortable place
to do it, might do a little pad updating there to
allow us to recover some data. We'll be talking
about reusing that EUV pad for rev 88.

18 54 38 CC-H Apollo, Houston. We're AOS at Vanguard for 7 minutes.

ACDR Okay, Crip. I got one for the electrophoresis.

CC-H Okay.

ACDR Okay. On sample 2 - it says sample 2 through I think
about 6, it says verify that the column temperature
is 10 to 12 degrees centigrade. This one has come
down - you know when we first put it ON, we put it
to COOL - and about 27 to - 14 or 15, it's just hanging
there. How long do I wait before I press on? Over.

CC-H Let us take a look and we'll get right back with you.

18 55 56 ACDR Crip, I've got to ... this, so I'll wait for your
answers on electrophoresis. Maybe I can - maybe you
can give me some data on that - you were talking
about on the EUV.

CC-H Okay. There's really no big rush on that, we can
get it at acquisition here of the - of the next ATS,
or we can go ahead and get it now. Whatever you'd
like to do.

ACDR Well, get me the answer to electrophoresis and if
it's - we got some time to copy it on ATS. I'll try
to get some chow and also get the electrophoresis
going when you get that answer.

18 56 33 CC-H Okay, Tom. What we'd like you to do is to go ahead
and press on with the ETE. No need to hold up for
the temperature. And also, on our telemetry down
here, we saw an indication of an MC&W. Did you have
that onboard, or is this something like what we
saw - -

ACDR Yeah. We had a MASTER CAUTION, and Deke and I looked
all over and couldn't find a thing.

CC-H Okay. Copy.

18 57 05 DMP Yeah. We got the panel covered with checklists and foodtrays right now. And I caught the red light but I never saw anything on the other ones. So I don't know what triggered it.

CC-H Okay. We'll - we'll take a look at our data down here and see if we can find - find the culprit.

DMP We're - normally assume it's high O₂, but that can get to be a bad habit.

CC-H Yeah. I think we'd be watching for that. Might tell Tom that when I see him at the - the next ATS pass, there or Newfoundland, I can start correcting that - that pad. And what I'm going to do is take the rev 88 pad that we used earlier, the EUV pad, and - and modify it to use in rev 94.

DMP Okay.

18 58 02 CC-H Deke, you got a - got a moment to let me - bend your ear about another item?

DMP Okay. Stand by just a second until I can get my hands empty.

DMP Okay.

18 58 24 CC-H Okay. A little bit later in the - in the Flight Plan, you're going to have a TV installation and - and setup - I believe to - to cover the - the fish. And on that - the - we believe that both of the cameras, both of the TV cameras in the docking module are not working properly. So what we would like to do if they're - if you've currently got one in 873, you can do it like we mentioned the other day, go ahead and mark it bad and temporarily stow it in D-3 if you'd like. And we want to use the camera that we've got in location 606 right now, and - for that setup.

DMP We were wondering what that camera was for. Okay, you want to put that up in the DM on 873?

CC-H That's affirm. Also, when you do that, you're going to have to make sure that it is put in - in MASTER

for using in there. It'll be in AVERAGE, MASTER, and LINEAR like we normally operate them.

18 59 31 DMP Okay. I'll set it up that way right now. And I assume you want the wide-angle lens on it also, it's got the long lens on it.

CC-H That's affirm. We want the wide-angle lens.

DMP Okay.

DMP You say neither one of those cameras are working up there, is that correct?

CC-H That's correct. They're working, but they're not working properly.

DMP Okay.

END OF TAPE

Day 202

TAG Tape 202-10/T-81
Time: 202:19:00 to 202:20:30
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ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

18 59 57 DMP Speaking of fish, a very important item, did anybody ever figure out whether sample 6 is supposed to be 5 or 6?

CC-H Well, it so happens that all of them were supposed to have been 6.

DMP That's amazing.

CC-H Maybe the little buggers are eating one another; I'm not sure.

DMP Well, as a matter of fact, I think you may be right. There's one of them there, I thought I could see a fish head in, but I thought, "No, I'm seeing things." I guess that background is pretty difficult to tell.

CC-H Yeah. Also, from what your question previously, - Deke, can you tell us if you pulled out the second bag, the one that had the eggs in it?

19 00 34 DMP Yeah; got it. And it's up there and I've taken one set of pictures of it per Flight Plan.

CC-H Okay. You noticed any - any hatchlings yet?

DMP Well, I didn't any yesterday, but I haven't looked at it today.

19 00 48 CC-H Okay. We're about ready to go over the hill here, and we'll see you at Goldstone in 15 - 15 minutes. And we'd certainly be interested in hearing there, when you take a look at it, whether we got any.

19 00 58 DMP I'll check it for you.

19 16 38 CC-H Apollo, Houston. We're AOS through Goldstone. We have you for about 2-1/2 minutes.

ACDR Okay, Crip. And another master alarm came on, as far as the light - but I didn't get anything on my headset. The whole panel is clear.

CC-H Okay. Copy. You got an MC&W. You did not notice any status lights and no tone.

19 17 01 CC-H Can you give - give us an estimate of what the time was, Tom? That way, we can go back and look at the data.

19 17 05 ACDR Oh, about 2 minutes ago, I guess. I just caught it coming out of the docking module. ... last 30 seconds. Except the light's pretty hot, it may have been on longer that that ...

CC-H Okay. And we were configured properly on the comm panel there, such that we would have picked up the tone. Is that right?

DMP Yeah, I'm configured right for it, Crip. But I wasn't on a headset. We're not sure whether Tom was or not.

CC-H Okay. I was - understand Tom was on the headset. And I just wondered about him there.

DMP Yeah, but I've - I've been on here most of the time. And the last three times it came on, I was on and my audio was on. And I didn't hear it.

CC-H You did not hear it. Copy that. Okay.

CC-H Okay. And if we have got some time here; well, we've only got about a minute until we're going to drop you out. Newfoundland in about 8 minutes. We'll see you there.

DMP Okay.

19 18 32 CC-H Okay. We show you did not maneuver, or - or you're still in P20, and you didn't pick up that VERB 49 maneuver, which is called out at 150:25. We need you to go ahead and get that in, so we'll be set up for the next helium glow.

CC-H And also, so we'll get you on ATS.

19 18 49 ACDR Roger. Doing it now.

CC-H Recommend you increase your DAP to 0.5 degree per second for this maneuver.

19 19 11 DMP Okay.

19 26 25 CC-H Apollo, Houston. We are AOS through Newfoundland.
Should get you with the ATS about 51 minutes.

ACDR ...

CC-H Okay. I heard you call back down, but it wasn't
very clear. If the comm's not going to be too hot
here through Newfoundland, we'll - we'll wait until
we get ATS lockup.

CMP Heard you loud and clear - this time, at least.

CC-H Okay. Reading you the same, now, Vance. One item
I would like to go ahead and pick up and get out
of the road is, for the upcoming helium glow pass,
I need to give you the times and a couple of deletions
on that.

CC-H That's rev 92/93 in your Supplement.

CMP Stand by. (...)

19 27 37 CMP Go ahead, Crip.

CC-H Okay. If you're looking at it, for - we want to set
the DET counting up to 151:36:36.

CMP Okay. Helium glow pad 92/93 - set the DET counting
up 151:36:36.

CC-H Okay. That's a good readback. We would like to
delete X-ray from - from this pad entirely. And we
would like to use, on our EUV ops, detector 2, vice
detector 1.

CC-H I'm sorry. I said that backwards. We want to use
detector 1, vice detector 2.

CMP Okay. Use - on EUV ops, use detector 1.

CC-H Okay. And that's going to be for this pad only.
And we're going to drop out here; we'll have to
pick up the ATS.

19 28 40 CMP Roger.

19 28 41 CC-H Okay. We're back with you again. And the only other item is - if you haven't done it yet - Seeing that you're in attitude now, you can go ahead and go back to 0.2 degree per second on your DAP.

19 28 58 CMP We're there.

CC-H Okay, fine. The other item I wanted to talk to you about was, as I mentioned several times, for rev 94 - instead of running the X-ray pad we've got there, we would like to take our EUV pad that we have for rev 88 and modify it somewhat, which will allow us to pick up some of the data that we lost. So if you could dig that pad back out, I would appreciate it. EUV pad, rev 88.

CMP Stand by.

CMP Okay. Go ahead.

CC-H Okay. The new time for setting the DET counting up to, will be 154:18:10.

CMP Copy.

CC-H Okay. I want to delete that entire line at 37 on the DET. That is, we do not need to do that X-ray cal it called for there.

CMP Copy.

CC-H Okay. For - We want to delete the X-ray at 58.

CMP Roger.

CC-H Okay. We see an MC&W for a high O₂ flow. But at zero time, we want to delete the - configuring the DSE. It will be a real - time pass.

CMP Roger. And I guess - of course, delete that 46 write-in of HIGH VOLTAGE POWER, OFF.

CC-H I'm sorry. You're - you're correct. Delete that.

CMP Okay. Just keep going, Crip.

CC-H Okay. At 12:07, I've got a new attitude for you. It's 018.00, 159.60, no change. Okay.

19 31 21 CMP Okay. At 12:07, 018.00, and 159.60.

CC-H Okay. That's a good readback. Starting with DET time of 15:43, we want to delete all items following that.

CMP Okay. That's the end of the pad, essentially, except for powerdowns too, you mean?

CC-H Okay. Now what we're going - I want to tell you what we're going to do. And I can verbally call these. At 16:48, we're going to go ahead and have you do X-ray ops. And then throughout that pass, what we're - for the remainder of the time, we're going to have you cycling the X-RAY HIGH VOLTAGE POWER, ON, for 2 minutes, and then OFF for 2 minutes, and back ON for 2 minutes, and ON for 2 minutes, and so forth. Okay. At about - at 38:30, we'll go ahead and do a power-down of the EUV and X-ray. And I can call those in real time to you, also.

CMP Okay. Then the attitude that we have at 15:43 will be the attitude that this X-ray ops is done in. Is that affirm?

19 32 43 CC-H That's affirm. That one that I just called out to you to enter at 12:07, will be the - be the one. And it will just stay there pointing at that one particular target.

CMP Right.

CC-H Okay. One other item associated with that is that I need to give you the high-gain antenna angles, since those are going to be modified slightly.

CC-H And you can either put - -

CMP All right.

CC-H You can either put them on the pad, or you can go ahead and put them in your Flight Plan, whichever way you would like to work with it.

CMP Okay. Why don't you just put them in - we'll put them in the pad here.

CC-H Okay. Put them in the pad. At 44 on the DET, put pitch of minus 45 and yaw of 184. And that will differ from what is currently written in your Flight Plan, but it shouldn't cause any problem.

CMP Okay, that's - 44 at the - near the beginning. Is that right?

CC-H Yeah, that's affirmative.

CMP Okay. Please repeat the angles again.

CC-H Okay. Minus 45 and 184.

19 33 53 CMP Okay. Probably be worth making a note at the end of this pad - We also want you to go back to - to 0.2 degree per second. And we'd have to make a special entry to do that on - at the end of the pad after the powerdowns.

CMP Okay. 6 - DAP entry of 61101 just after powerdown.

CC-H That's affirm.

CMP Houston, Apollo.

CC-H Go ahead.

CMP A minor thing, but I was noticing you said that everything after 15:43 was affected by this change, by and large, and at 15:43 time we have an insertion to put in DAP 61101.

CMP So isn't your last comment redundant?

CC-H Okay. I had intended for you to delete all items after that. It really doesn't make any difference. Once you're in attitude, you can go ahead and put it in. Whichever way you would like to do it.

CMP Okay. Fine.

19 37 50 ACDR Houston, Apollo.

CC-H Go ahead.

ACDR Okay, Crip. I noticed for about the last hour or so that one of these suit hoses was spitting water out in that thing. So I went up to the - just now we started talking about it. I went up to the docking module. The other .. of the docking module is spitting water out a little bit. So I'd assume the one that's going down the VTR is spitting some water on the VTR too.

CC-H Okay. Copy that. Let's see.

CC-H Okay. Our INCO friend would like to get that hose out of his VTR then.

19 38 32 ACDR Bet that really cooled off, all that water evaporating in that thing.

CC-H Well, you don't know how long he cried to get it in there.

DMP Can you guys tell whether our squeezer's working or not? It might be coupled with this O₂ flow business.

19 38 49 CC-H I'm sorry, Deke. Would you say that again, please?

DMP Can you guys down there tell whether our water squeezer's working or not? This may be coupled to our O₂ high flow business too.

ACDR Hey, Crip. You can tell your INCO friend we got - I got a couple of tablespoons of water out of the entrance to his VTR here.

CC-H Okay. Copy.

19 39 27 CC-H As a - as a matter of information, if the AC's still listening. He discovered that he caught us with a small error there on that checklist while ago on the ETE, that we had you waiting on the wrong - on the wrong temperature. We were supposed to have been using the TE temp versus the column temp, and we need to get that noted in the checklist sometime. If it's not convenient now, we can do it later.

ACDR Well, it was - Say again. It was supposed to be the TE temp?

CC-H Yeah. That - the checklist was in error down there on the bottom of that page 1-7. Where it says "column temp," it should be "TE temp."

ACDR Ah, hah. TE temp is 11 degrees (laughter). Okay.

CC-H Okay. If you get a chance, you might - might make a notation here. Say, also, Tom, earlier, when you were talking about sample 1, you mentioned a couple of bands. We were expecting to see three. Did you - It's not necessary to go dig it out, but can you remember seeing three, or was it only two?

19 40 30 DMP Well, it looked to me, Crip, like there was a - the leading band that was a narrow one. What would you say, Tom, about 5 millimeters?

ACDR Yeah.

DMP And then the second one was two or three times that wide. Or maybe the second one was really three I don't know.

ACDR Okay. I recorded that the - the leading band went from 118 to 123 or 24 by 6 wide. The second one was about - Oh, the second was actually wider than the first one. Yeah, the second one was - it you looked - was nearly 12 millimeters wide. The first one was - oh, 5 or 6 millimeters wide; the second one was 12.

19 41 09 CC-H Okay. But there were only two that you could - could note?

ACDR Yeah. And they were faint bands, but you could see them, you know.

CC-H Okay. Real fine. Thank you very much.

DMP Hey, Crip, I wonder if you could have your Earth obs guys do me a favor?

CC-H Try it. Go ahead.

DMP Rog. Next time we got a pass through the middle of Wisconsin, then give me a little bit of warning. We came over there yesterday. I was evaluating the high power scope that messed up the day. I saw it in time, but sitting there with a 300- millimeter lens, so I didn't get much of it.

19 41 54 CC-H Yeah. It looked like we just had a pass over there this last rev around. We'll try to look at that for tomorrow and warn you.

DMP Yeah. We got some pictures with a 300, but that's kind of a lousy lens for the kind of photography we're trying to take.

CC-H Okay. I don't know whether Vance is still listening, but the surgeons are very pleased with that OBS exercise that they got awhile ago, and it looks like he's in excellent condition, as we all knew he was.

19 42 28 ACDR Hey, Crip, I got an idea here, just real fast.

CC-H Go ahead.

ACDR For Mr. VTR, what about just leaving a return hose in there so at least it can suck some air out in the VTR and keep the inlet hoses away from it while it's spitting water?

CC-H Okay. The activity we've got on the VTR now is very minimal, so we really don't need all that cooling, and that's not really necessary. But it sounds like a good pretty idea, if we need it later.

ACDR Okay. I'm - All the hoses are out of the VTR.

19 43 04 CC-H Thanks a lot.

19 47 50 CC-H For the DP. Deke, awhile ago you asked about your water squeezer. We're confident that it's working satisfactorily, and we have seen water like this produced previously on the lunar orbit, I guess, when we were operating without the primary evap on like we got now. I'm afraid it's probably just something we're going to have to live with.

DMP Okay; no big deal. Just occurred to me that we were getting all these high flows, that there might be something going on with the squeezer.

19 48 14 CC-H Rog.

CC-H Apollo, Houston. We'll probably have a little bit early LOS here on our ATS, and next station contact is in 29 minutes through Orroral.

19 52 16 ACDR Roger.

ACDR Hello, Houston; Apollo. You still read?

CC-H Rog. We're getting ready to cut you off shortly, though. Go ahead.

ACDR Oh, okay. Good. Because - Yeah, even though we're in contact with you on this data, we still go DSE, HIGH BIT RATE, RECORD, FORWARD, and COMMAND RESET. Roger?

CC-H That's affirm. We need INCO to get a command in first, though.

ACDR Okay.

19 56 33 CC-H Soon as we - we'll go LOS ...

20 21 19 CC-H Apollo, Houston. We're AOS through Orroral. We've got you for a minute, and our next station contact will be at the Vanguard at 152:05. And that's about 5 minutes away.

20 21 30 CMP Roger.

20 26 40 CC-H Apollo, Houston. We're AOS through the Vanguard for 6-1/2 minutes.

ACDR Okay.

CC-H I don't know if you guys have taken a chance to look at your orbital map, or maybe somebody told you earlier, but the Vanguard is underway and sailing west at this time. That's why we're picking you up a little bit earlier on it.

CMP Okay. Guess we kind of expected that.

(Music: "Colorado Rocky Mountain High" by John Denver.)

CC-H I'd almost swear Pete Conrad was up there.

CMP Got all kinds of western up here.

CC-H Rog. Rog.

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CMP Even "Colorado Mountain High."

CC-H Right.

20 28 59 CC-H Apollo, Houston. If we could, we'd like to get an update on the furnace. According to our Flight Plan, it should have been shut down, and we show it still powered up. Are we running a little bit behind there?

ACDR Deke's up there working on it now.

20 29 13 CC-H Okay; fine.

END OF TAPE

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

20 32 16 CC-H Apollo, Houston. We are 1 minute from LOS. Next station contact will be through Goldstone. That's about 15 minutes away, and it'll be at 152:25. 152:25.

ACDR Okay. Real good. Thank you, Crip.

CMP Hey, Crip. Deke says the furnace is off now, and he's doing prep for MA060.

20 32 39 CC-H Rog. In looking at how we got here, I guess we look like we were just dominoing down from the fact that we had that problem on the ETE with the temperature, and I think everything's just running a few minutes late. We understand it.

20 47 19 CC-H Apollo, Houston. We're AOS at Goldstone for 6 minutes.

ACDR Roger.

CC-H Apollo, Houston. For the AC, while you're sitting here waiting for loading your next P20 - got one other item I might discuss with you briefly.

ACDR Go ahead, Crip.

20 50 20 CC-H Okay, Tom. You guys have probably been doing it already - but a request here is that, if you haven't, you might get some DAC footage, using 24 frames per second, of each of you guys doing - any - you know, any kind of task around the spacecraft there, to use for a postflight film. If you haven't, we suggest you might could use the CI01, which should be in F-2.

ACDR CI01 in F-2. Okay.

CC-H Okay. And a 10-millimeter lens would be good for that. And we do want to get it at 24, cause it works out much better.

ACDR Roger.

CC-H Apollo, Houston. We're about a minute from LOS, and our next station contact in 7 minutes through Newfoundland at 152:37. 152:37.

20 52 12 ACDR Roger. Newfoundland, 132:57 [sic].

20 59 08 CC-H Apollo, Houston. We're AOS through Newfoundland for 7 minutes.

ACDR Roger. And I understand we don't have the ATS this time, due to latitude.

CC-H That is correct.

ACDR Houston, Apollo.

CC-H Apollo, go ahead.

ACDR What ..., Crip? Are your data looking good on us?

CC-H We're looking at you through Newfoundland right now and - which means we're only talking and not looking, VHF only, so we don't have data. Up until this time, it had been looking good.

ACDR Okay. Everything's been going right on schedule.

CC-H Rog. It looks like you're really having fun sitting there punching the DISKY. About to wear out your finger.

ACDR Need new fingertips, when this mission's over.

CC-H Roger that.. Take care of all fingerprints.

ACDR Right.

21 02 06 ACDR Hello, Crip, Apollo.

CC-H Go ahead.

ACDR I was just thinking, if I had a penny for every DSKY stroke, we could have a hell of a splashdown party, couldn't we?

CC-H Well, that's (laughter) that's certainly a good idea. I think we should have one anyhow.

ACDR Oh, we will.

CC-H A little - little side information. After I give this mike here to Dick Truly, I'm going to go over -

We're having a little touchdown party for the - for the Soyuz tonight.

ACDR Oh. Real good. Sorry we can't join you.

CC-H Oh, you can have a little orange juice or whatever you got onboard there.

ACDR All righty.

CC-H Tom, you still reading me loud and clear?

ACDR That you, Crip?

CC-H Yeah. I want - I wanted to tell you I got some good news, and I got some bad news. We don't need you to swing through the trees like Tarzan, but would you believe that, due to a little ground error here, we ended up losing all of your OBS exercise data yesterday?

ACDR Okay. Sorry about that. I was working out like mad.

CC-H Well, we were wondering if we could - convince you to do it once more for us.

ACDR Yeah. How about the day before entry?

CC-H Well, that looks kind of busy. We're actually looking at one little spot later on this evening or tomorrow, and we can talk about that a little bit later.

ACDR All right.

21 05 07 ACDR ... that you figured right onboard for that.

CC-H Yeah. It - it was a problem we had here - down here. We know it was right onboard.

21 05 49 CC-H Apollo, Houston. We're 1 minute from LOS. Next station contact in about 4 minutes through Madrid. Call you there.

ACDR Roger.

21 10 37 CC-H Apollo, Houston. We're AOS Madrid for about 2-1/2 minutes; correction on that - for about a minute and a half.

ACDR Okay.

21 11 38 CC-H Apollo, Houston. We are 1 minute from LOS, nice long one here. Next station contact will be Orroral in about 40 minutes. And that's at 153:30. 153:50 - correction, 30.

ACDR Roger. 153:30, Crip.

CC-H Roger, Tom. Just one thing we're working on down here is a caution and warning tone, when you announced to us you've had some caution and warnings without a tone. Have you had any subsequent ones that you've had the tone with?

ACDR No, not a bit. That's the only time.

CC-H Okay. That concerns us somewhat that the tone - when it's not working.

CC-H We'll go ahead and say good evening to you, and be turning you over to the Silver Team.

ACDR Okay. Real good. Thanks a lot for all the help, Crip. Needless to say, we've been busier than the proverbial left-handed paperhanger up here.

CC-H Rog. Sounds like you're having fun.

ACDR Yep.

CC-H If you want to look at Systems Checklist 1-33, you might run through a C&W check.

ACDR Say again.

CC-H Checklist 1-33.

ACDR Roger.

21 13 15 CC-H That's to allow you to check it out, if you'd like.

21 50 42 CC-H Apollo, Houston. Hello at Orroral Valley on VHF. How do you read?

ACDR Pretty good. Hello, Houston; Apollo.

CC-H Apollo, Houston. Tom, I read you. Go ahead.

ACDR Okay. Loud and clear. Deke is doing the fish experiment. I'm still working the helium glow scan, rev 92/93.

CC-H Okay. Fine.

ACDR And Vance is working in between on both things.

CC-H Roger.

ACDR We're all set to go to that con - new contingency pad for the X-ray. Then we'll start that - in fact, we'll get busy on that starting about 154:00. One thing, we did check the caution and warning. Everything checks okay. The only thing is that the warning tone in our headset - we can barely hear it when it's turned up, but it's real low - it's dropped considerably compared to when we first - first couple of days in the spacecraft when that O₂ warning used to keep us wide awake - you know, all the time.

CC-H Sure. Yeah, I remember.

21 51 53 ACDR As your warning goes on, the red light goes on. But you can just barely hear it. That's the only difference. And we haven't had any more funnies where the warning light would go on with no other warning on it. Over.

CC-H Okay; fine, Tom. Let us talk about that just a minute. We'll be back to you. Thanks for letting us know though.

ACDR Okay.

CC-H Apollo, Houston. We're 1 minute from LOS. Hawaii comes up at 153:48.

ACDR Roger.

CC-H And, Tom, one of the things that we also want to check about the loudness of the tone on the caution and warning is how loud it is with the speaker box turned on, cause that's the sleep configuration.

Day 202

ACDR Okay. We can check that. And we'll have an answer
for you by the time you get to Hawaii.

21 55 56 -- CC-H Okay. Real fine. Thanks.

END OF TAPE

Day 202

TAG Tape 202-12/T-83

Time: 202:22:00 to 202:23:30

Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

22 09 46 CC-H Apollo, Houston. Hawaii for 7 minutes.

ACDR Roger. Read you loud and clear.

CC-H Okay.

ACDR And we - we've checked the caution and warning, and it'll blast you right out of the spacecraft. There's no problem with the speaker box, as far as the speaker box goes; it's just in the headsets. We could ... the speaker box ...

CC-H Okay. One question, Tom. Do you have the same problem with the low tone from all three audio centers, on the headsets?

ACDR Roger. All three.

CC-H Okay. Understand. Copy. Thank you much.

22 15 06 CC-H Apollo, Houston. One comment on your jet selects.

ACDR Go ahead.

CC-H May be going in the keyhole; hang on a second. Okay, you reading me loud and clear, Tom?

ACDR ...

CC-H Okay, you know yesterday we turned off one of the roll jets, Bravo 2, and turned on Delta 2. That balance worked well and the quads are more balanced than they were. The next time you come to a jet select - it's in the Flight Plan about an hour from now, and it's printed there and we want you to go back to the nominal configuration there at 155 plus 07 and then just follow the Flight Plan after that.

ACDR Roger. Nominal jet select on auto RCS at 155:07.

CC-H That's right, and then after that, just do what the Flight Plan tells you whenever you come up on it. Thanks a lot.

ACDR Okay, Dick. From 155 on, we do exactly what's in the
 - in the Flight Plan.

22 16 09 CC-H That's affirm. And we're about a minute from LOS
 Hawaii. Newfoundland comes up at 154 plus 10. I'll
 see you there.

22 16 16 ACDR Thank you.

22 31 18 CC-H Apollo, Houston. Newfoundland for 7 minutes.

 ACDR Roger. How do you read?

 CC-H Loud and clear, Tom.

 ACDR We read you loud and clear now.

 CC-H Okay.

22 35 18 ACDR Houston, how do you read through ATS?

 CC-H Apollo, Houston. I read you loud and clear. Let's -
 let me make sure that I heard that through the ATS or
 through Newfoundland. Stand by.

 ACDR Okay.

 CC-H That's affirm, Tom. We're locked up on the ATS.

 ACDR Okay, and we're all set, and we're counting down in
 the EUV pad, rev 88 ...

 CC-H Okay, Tom. Since I handed over to Crip, I wonder
 if I could review with you just so you and I both
 understand how we're going to run this pass. Over.

 ACDR Okay, go ahead.

22 35 55 CC-H Okay. I've got the pad here that is marked up per
 Crip's markups. As I understand it, at - we're going
 to go right through the pad down to the time where
 it says 12 plus 07 and then - -

 ACDR That's right.

 CC-H - - then at 16 plus 48, I'm going to give you a call
 and we're going to do an X-ray ops. And then from
 there to the end of the pass, we're going to

cycling the HIGH VOLTAGE on and off on 2-minute -
on 2-minute intervals. And we - if the PI - -

ACDR Roger.

CC-H Okay, and if the PI desires by looking at the data
in real time to change that 2 minutes, I'll give
you a call.

22 36 36 ACDR Okay; good. Now we're talking HIGH VOLTAGE only.
2 minutes on, 2 minutes off, 2 minutes on, 2 min-
utes off.

CC-H That's affirm, Tom. And then at the end of the pass,
and I'll give you a reminder on this also, we'll
fix up the DAP.

ACDR Okay.

CC-H Okay, real fine. I think we understand it, and I'm
standing by.

ACDR All right; good. And - you know, there's also some
new angles here that they - they called up to us at
12:07. It's 018.00 and 159.60. Over.

22 37 12 CC-H That's affirm. You cop - you read them down
correctly, Tom. And down on panel 230, if one of
you'd help us out and go UP TELEMETRY switch to UP
TELEMETRY; that's center position.

ACDR Okay.

ACDR Dick, Deke wants to talk to you for just a minute
here. He'll be coming on the headset.

CC-H Okay, fine. I'd love to speak to him.

DMP Hello, there, Dick. How you doing?

CC-H Great, Deke. And you?

DMP Well, I'm not sure. I've got a question here. We're
doing ETE ops and we're supposed to be on the shut-
down on the third sample. Our little old kitchen
timer got away from us, so we're kind of doing it by
stopwatch or, you know, good old Earth watch.

CC-H Roger.

22 39 16 DMP And by my watch, we've been running here almost 2 hours on this one sample, and it still has not shut down. They're supposed to shut down in 75 minutes, and the voltage get down to somewhere near zero. I'm still reading about 335 volts on her. And I think my timing's pretty good, so I wonder if somebody could tell us if we've got a malfunction or whether we should just go ahead and shut it down based on time.

CC-H Okay, Deke. Let us talk about it a second here.

DMP Thank you.

CC-H And I'll get back to you.

DMP Okay.

22 42 11 CC-H Apollo, Houston. Answer to Deke, we'd like to proceed on and do the ETE freeze that's scheduled there. You've got it in front of you, I'm sure. It's page 1-9.

DMP Okay, do the freeze and don't worry about the voltage, right?

CC-H That's affirm.

22 42 29 DMP Okay, thank you.

22 50 11 ACDR Houston, Apollo.

CC-H Go ahead, Tom.

ACDR Okay, just wondering how the data's coming down there on the ground since we're taking it back through ATS.

22 50 22 CC-H Okay, let me check. We've been - I've been watching you here doing the maneuvers. Let's - let me check with Experiments. It's looking real good, Tom. So reports the Experiments Officer.

22 50 33 ACDR Real good; thank you.

22 56 20 ACDR Okay, Dick. If you're reading, it doesn't look like we're going to reach that attitude, even with that

DAP rate, by the time we get to 16:48. Over. We may do it.

CC-H Okay. I was watching it, too, here. When we get to 50:18, Tom, you can go ahead and do the X-ray power - X-ray ops, and you might give me a mark when you put the HIGH VOLTAGE POWER to 1, so I can help you keep up the time. Also, after we get to 50:18, at your convenience, you could go ahead and change the DAP that's listed there at 15 plus 43 in the original printed pad.

ACDR Okay. We're coming up to it now. I'll change the DAP and then start it.

CC-H Okay. I see the 50:18.

DMP Okay, Dick.

22 57 26 ACDR Okay. You've got the tight DAP.

CC-H Okay. Real line. Thank you much.

22 57 34 DMP Okay, Dick. You guys ready for a SAM cal?

CC-H Stand by, Deke. Let me see.

CC-H That's affirm, Deke. We are.

22 57 44 DMP Okay. Coming on in 20 seconds.

ACDR Okay, Crip. I'm down here now.

CC-H Okay.

ACDR You read me okay?

CC-H That's affirm, Tom. Go ahead.

22 59 30 CC-H Okay. We see that you have the HIGH VOLTAGE, ON, and now we'd like cycle it off and on every 2 minutes. Would you like me to give you a call, or you want to keep up with it?

23 04 44 CC-H Apollo, Houston. Deke, we never did see a SAM cal, and I'm assuming you did do that when you said you were, is that right?

ACDR Yes, he did.

CC-H Okay, fine. Let us check our data. I'll be right back to you.

ACDR Okay.

ACDR He was waiting for you to call back. He went to work on some other stuff.

CC-H Okay. I'll be right back to you.

23 05 15 ACDR Okay. In 5 seconds, I'm getting the HIGH VOLTAGE POWER, OFF.

CC-H Okay.

ACDR 2, 2 -

23 05 20 ACDR MARK it. HIGH VOLTAGE POWER, 1, off.

CC-H Okay.

DMP Yeah, Dick. I gave you the SAM cal when I called it there for 20 seconds, per the checklist, but - -

CC-H Roger.

DMP - - ... to give you a readback - -

CC-H Roger. Deke, stand by a second. We did not see the cal. We may ask you to be doing another one here. And, Tom, when you turn on the HIGH VOLTAGE POWER this next time, after the 2 minutes has elapsed, leave it on until I call you to turn it off. Those first two times you turned it on, our data is looking a lot better.

ACDR All right.

23 06 14 CC-H Deke, Houston. About all we can ask you to do is, is ask you if you see the - verify that the SAM indicator light was on and to recheck the connections - the cable connections, and we'll have to try to get another SAM cal.

23 06 33 ACDR Okay. I got the HIGH VOLTAGE POWER back on.

CC-H Okay. Just leave it on until I call you, Tom.

ACDR Real good.

23 07 28 CC-H Apollo, Houston. Tom, would you turn the HIGH VOLTAGE POWER off now, and I'll call you to turn it back on.

CC-H And, Apollo, Houston. Deke, did you copy what I said about the SAM? We'd like to check if the light is on and reverify the cable connections.

DMP Yeah, I reverified everything. I don't have a light on, and I'm trying to figure out why. Stand by.

CC-H Okay. We understand. And if somebody has a Flight Plan handy, I've got an update to the SAM start times down there at about 155 plus 45.

23 09 07 DMP Okay. Let's try another cal and see what happens.

CC-H Okay. Do you have a green light now, Deke?

23 09 14 DMP Yeah. Since I never ... is supposed to be.

23 09 24 CC-H Okay. We're GO to try another cal, Deke. We're watching our data.

DMP Okay.

CMP And, Houston, we're ready for a Flight Plan change.

CC-H Okay. And the SAM cal looked good that time. Thank you very much.

ACDR Okay.

23 10 01 CC-H And, Tom, Houston. We'd like the HIGH VOLTAGE back on, please.

23 11 21 CMP Houston, Apollo.

23 11 26 CC-H Apollo, Houston. On panel 230, we'd like to put the X-RAY PURGE switch down to CAL for 10 seconds, and then let it go. The cal target seems to be stuck partially in front of the instrument.

ACDR Okay. Down for 10 seconds. I'll give you a mark to it. 2, 1 - -

23 11 46 ACDR MARK. Holding CAL for 10 seconds.

CC-H Okay.

23 11 56 ACDR MARK. Back to neutral.

CC-H Okay. Thank you, Tom.

CC-H Also, if somebody's up there by the DSKY, we'd like to get the ATT SET switch out of the IMU position. And on panel 230, Tom, we'd like to get the HIGH VOLTAGE to off now.

ACDR HIGH VOLTAGE POWER coming off.

ACDR MARK it.

23 12 16 CMP Hey, Dick.

CC-H Go ahead, Vance.

CMP You know, the standard - the standard setting is IMU - or is GDC, but really - doesn't really matter in a nondynamic phase of flight like this. Hey, and did you have some updates for me here?

CC-H Yeah, I do, Vance. Let me read them to you real quick. The SAM start time at 155 plus 45 is 155:44:34. And I've also got a start time on the next page.

CC-H Vance, Houston. Did you get the SAM start time update?

CMP Roger. I called it back, and I was waiting for the next. I guess you didn't hear me. Do you hear me now?

CC-H Yeah. I hear you loud and clear now, but I never heard you call me. Sorry about that.

CMP Okay. Well, maybe it didn't get through. Anyhow, I copied 155:44:34, and I'm waiting to copy the next.

CC-H Okay. Sorry about that. At 156 plus 10 or about, over there, that time should be updated to read 156:23:22.

CMP Okay. 156:23:22. That's the start time at about 156:10.

CC-H Roger. That's right. Thanks a lot.

23 14 20 CMP Right.

23 14 38 DMP Hey, Dick. Since nobody told you, you'd be happy to note that we've given birth to five little fishy-niks up here.

CC-H You've done the fish experiment, huh? Very good.

DMP ... Yeah. They're starting to hatch.

CC-H Hey, great.

DMP However, we also lost one more of our old ones. I don't know what happened to it. Just evaporated away.

CC-H Roger.

DMP I asked those guys what those poor little fish were going to eat. Maybe they decided to eat each other.

23 15 20 CC-H (Laughing) I think - That's what I was getting ready to say. That's most likely.

23 15 47 CMP And, Houston, Apollo. I presume everywhere where we see "Activate primary evap," just keep crossing it out - -

CC-H That's affirm - -

CMP - - until further notice.

CC-H That's affirm, Vance. Just keep deleting those steps wherever you see them.

23 16 03 CMP Right.

23 17 28 CMP And, Houston, Apollo.

CC-H Go ahead, Vance.

CMP Do you still want us to hold this attitude for the sake of the X-ray, or are we clear to go ahead and maneuver it to the SAM attitude?

CC-H What we'd like you to do, Vance, is coming up here in just about a minute at a DE time of 38 plus 30, we'd like you to go ahead and de - do an EUV power-down and an X-ray powerdown. On the X-ray, all you'll have to do is close the cover. And after you've done that, you're clear to go ahead and go to the SAM attitude.

CMP Okay. Say the time again.

23 18 07 CC-H It's 38 plus 30, and that's 30 seconds from now. I'll give you a mark if you've changed the DET.

CMP Okay. We got it.

23 18 15 CC-H Okay.

23 19 55 CC-H Apollo, Houston. You're - you're clear to go ahead and power down the EUV and close the X-ray door, and proceed with the maneuver.

ACDR Houston, Apollo.

CC-H Go ahead, Tom.

ACDR Roger. On the X-ray powerdown, do you want me to go to PURGE CAL for 30 seconds or -

CC-H Negative. All we want you to do on the X-ray is just close the cover and do a complete EUV power-down.

23 20 59 ACDR Roger. In work.

CC-H Okay.

23 21 35 ACDR Okay, Dick. Both the X-ray and the EUV are powered down.

CC-H Okay. Thank you very much, Tom. Tom, are you looking at the Flight Plan or could you look at one real quick at about 157 hours - or so?

ACDR Hang on. I'm in a corner here, and helping Deke, and doing that; and Vance is up there. Hang on.

ACDR Okay, go ahead.

CC-H Okay. First of all, we're 2 minutes to LOS and - from this ATS pass. The next station contact is Newfoundland at 154 plus 09. What we wanted to suggest to you on this exercise business was to see that ATS pass. It starts at about 157 plus 20 or so. We've got to dump about 3 to 5 minutes of DSE data there. We were hoping that you could don the OBS prior to that, and then as soon as we've dumped that data, we can watch about 10 minutes of exercise and 5 minutes of cooldown in real time and not interfere with the other two guys doing the SAM operations.

ACDR Okay. If we keep on schedule, we'll do it.

CC-H Okay. Real fine, Tom. Thanks a lot. And we'll see you in Newfoundland.

23 23 00 ACDR Roger.

23 24 41 CC-H Apollo, Houston. We've got a VHF pass here that wasn't originally scheduled, or at least it wasn't on your Flight Plan there, through Honeysuckle VHF. How do you read?

23 24 50 ACDR Loud and clear.

CC-H Okay. I got nothing for you here, Tom. I'm just standing by.

23 24 56 ACDR All right.

23 27 31 CC-H Apollo, Houston. We're 1 minute from LOS. Newfoundland at 154 plus 09. See you there.

END OF TAPE

Day 203

TAG Tape 202-13/T-84
Time: 202:23:30 to 203:01:00
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

00 06 28 CC-H Apollo, Houston. Standing by at Bermuda.
ACDR ...
DMP Okay, Dick. Do you read?
CC-H That's affirmative. Go ahead.
DMP Yeah, we're just ...
ACDR You got about ten echoes.
CC-H Roger. I can hear the echoes down here. Let me -
let's check something here. Stand by.

00 11 20 CC-H Apollo, Houston. How do you read now?
DMP Still got a lot of echo there.
CC-H Okay. Stand by just a second.
CC-H Apollo, Houston. How about now?
DMP That's better. Much better.
CC-H Okay, Deke. I was getting an echo for you, and it
just about made what you said unintelligible. Say
again, please.
DMP Okay. We - The only problem is when I turned down
the interval - -
CC-H Stand by.
CC-H Apollo, Houston. I'm sorry. Just as you said that
again, Deke, we had something happen. A real loud
noise came on, and I didn't get it. I'm going to
have to ask you to say again, please.
DMP Okay. How do you read now?
CC-H I read you loud and clear.
DMP Okay.

00 12 57 DMP Okay, Dick. Anyway, what happened, we got the run off in fine shape except we didn't get any film shot. We could hear the intervalometer clicking away, and we checked the mag at the end of the run for a number and discovered that we hadn't shot anything. And we're troubleshooting the camera now, but it looks like we may have not got the lens cranked on all the way.

CC-H Okay. Copy, Deke.

DMP So I think we better set up to redo that one.

CC-H Okay. We'll crank that one into our planning.

DMP Okay. But everything, procedurewise, looked great. And the calibration was right in the center of the SAM, so it should have been in good shape, as far as what the SAM was seeing.

CC-H Okay. Real fine, Deke. And we'll crank it in. I'm sure it's as much of a disappointment to you as it is to us not to catch it, but we'll see if we can reschedule it some other time.

DMP Okay. Well, I just got another pass here shortly, anyway, so we'll see how that one goes.

00 14 04 CC-H Roger. Incidentally, Deke, the prime SAM data is on telemetry, and we got it there, so we may be in good shape.

DMP Rog. And we didn't get you any pictures, unfortunately.

CC-H Stand by, please.

CC-H Deke, Houston. How do you read now?

DMP Rog. 5 by.

CC-H Okay. I think I may have dropped out a second. It turns out that our prime SAM data is on the telemetry, and it looked good down here, and we've got a couple of sunrises and sunsets scheduled. So we think we'll - we're doing just fine, even if we did miss that film.

DMP Okay, and we'll make sure we get it the next time around.

CC-H Okay.

00 15 03 DMP Couple of comments, Dick, before I forget it, on the electrophoresis. It's been going along fine, but both samples 3 and 4 had one small bubble right in the middle - about a 1-millimeter bubble. I was able to get those bubbles out to the far end in both cases, so hopefully, it will not influence the sample. But I thought I'd better notify you of that, in any case.

CC-H Okay, Deke. We copied, and we'll pass it back to the backroom.

DMP Okay.

00 16 54 CC-H Apollo, Houston. We're going to switch modes here and start a dump. I'll be dropping out for about 30 seconds. I'll give you a call here in a second.

DMP Okay.

CC-H Deke, Houston.

DMP Yeah, go ahead Dick.

00 18 16 CC-H Hey, Deke, on this sample 4 business, when you think that - We don't want to cut that one short for sure, but in case it doesn't shut down automatically, after about 50 minutes, if you're timing it somehow up there, you can go ahead and do the terminate. When you do the terminate, we'd like a COLUMN VOLTAGE reading prior to doing the terminate. Over.

DMP Okay. The other one was about 3:35 - 3:34 when we terminated it, incidentally.

CC-H Okay. And is Vance listening up there, or is he busy?

CMP I'm listening. Go ahead, Dick.

CC-H Vance, I wanted to pass up a comment to you from the G&C about the ATT SET switch. It turns out that

there is one little - one thing that - that causes us to want the ATT SET switch to stay in GDC when you're not doing a GDC aline. And that is when it's left in IMU, the fact that the - the presence of the ATT SET equipment or electronics - the presence of the ATT SET equipment in the electronics loop over a period of time creates a - an invalid error in our telemetry readout of the raw resolver errors, an - and that's the reason that G&C wanted you to - to not leave it in the IMU position. Operationally, it - -

CMP Okay,

CC-H - - operationally, of course, it doesn't make any difference.

CMP Yeah. You're exactly right, although it does make a difference in some maneuvers and that sort of thing. But if it affects the TM, that's a good reason.

CC-H Okay. One other - -

CMP Thank you.

00 19 56 CC-H - - one other thing, and there's no hurry on this. But when you get a chance, we were thinking about asking you to isolate the audio centers one by one and try the caution and warning tone, and see if you had any difference with a less of a load on the audio centers. So - so sometime this evening, you might just sequentially turn all the audio centers off but one and then try the caution and warning tone, and see if that makes any difference. We're just trying to isolate the problem.

CMP Okay. So you want POWER to OFF, two at a time. Go - go around the ring and see how it comes out, right?

CC-H Yeah, I think that'd be the easiest thing. Just put up there - go from POWER from AUDIO/TONE to OFF on two of them, and then on the one that's listening, create the tone and see how it turns out. And you could do the - -

CMP Okay.

00 21 33 CC-H And, Apollo, Houston. When somebody gets a chance, I've got some more updates on the SAM times. The first one at 157 plus 15, but we've got lots of time. Whenever somebody's got a Flight Plan in front of them, I'll give you the numbers.

CMP Stand by.

CC-H Okay.

CMP Okay, ready to copy.

CC-H Okay, at 157 plus 15 there, Vance, that little pad that's in there, the time should read 157:13:22.

CMP Okay, at about 157:15, it's 157:13:22.

CC-H Okay, and if you'll turn the page over there to about 157 plus 45, those times should read 157:52:09.

CMP Okay, and at about 157:45, it's 157:52:09.

CC-H Okay, thanks a lot, Vance.

CMP Right.

CC-H Deke, Houston.

DMP Go ahead, ...

00 25 27 CC-H Okay, on this next SAM operations for sunrise, since we missed some of the film for that first one and it's not good - that film is not good for anything else. I've got one minor change to the procedure on page 1-34. And it's real simple. All I want to do is - is to turn the INTERVALOMETER, OFF, at 3 minutes instead of 1 minute, and that'll use up the film in there, because we're going to be changing that mag out after this anyway.

DMP Okay, off 3 instead of - okay, my checklist says 2-1/2. Do you want to shoot 3 minutes instead on 1-1/2 worth of film. Is that the idea?

CC-H Well, let's see, you looking at page 1-34? I think INTERVALOMETER, OFF, is at 1 minute. I want to change that to 3 minutes, but of course that's for this - this operation only.

DMP Okay, I got you.

CC-H Okay, thanks, Deke.

DMP Roger.

00 29 19 CC-H Apollo, Houston. Incidentally, we've been watching here in the MOCR a film of Alexey and Valeriy landing earlier this morning. They ended up in a stable 1-1/2, lying on their side.

ACDR Beautiful.

CC-H It was - -

ACDR Are they on their way back to Moscow now?

CC-H Oh, I doubt if they're back there that far, but they - We watched them on TV when they got out of - They - they turned them right side up, and they opened the hatch, and they were walking around. Looked real fine. Looked happy to see home.

DMP Was it real level country?

CC-H Oh, yes.

CMP ...

CC-H Very flat and good pictures of it. Of course, the pictures - They showed pictures of the descent taken from helicopters at the scene. But it looked real fine.

CC-H And, incidentally, Deke, I guess - I imagine you've already done this, but prior to that next SAM data take, after you've - after you've gotten the lens on there, you might run off a couple of frames and just make sure it's working okay because we have plenty - -

DMP I've already done that.

CC-H I assumed that you had.

DMP Yeah, we already did that.

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CC-H Okay, fine. Thanks a lot.

DMP ... Yeah, we got faked out because we could feel the thing running but it wasn't.

CC-H Rog. No problem.

00 30 48 ACDR Okay, Dick. On sample 4 on the electrophoresis, at 45 minutes the COLUMN VOLTAGE went down to about 4, so it looks like it's all shut off and working good, and I'm in the freeze cycle.

CC-H Okay. Thanks, Tom.

CC-H And, Apollo, Houston. Tom, hold up on the freeze. We think we're just supposed to do an ETE terminate. We're not supposed to do a freeze on that sample.

ACDR Hang on.

00 31 56 CC-H And, Tom, Houston. We did recheck with the backroom; and we want to do a ETE terminate procedure on that sample and not a freeze.

ACDR Roger.

CC-H Apollo, Houston. If you called, say again, please.

ACDR No, we didn't call you.

CC-H Okay.

ACDR Houston, Apollo.

CC-H Go ahead, Tom.

00 34 54 ACDR Okay, I'm looking at the checklist here on the ETE operations on page 1-8, 1-7, and 1-9. And just going by the checklist it doesn't tell you not to freeze when you see samples 4 or 8. Maybe flight - maybe the Flight Plan has a thing that - that says "do not freeze" or something.

CC-H Yeah, I think, Tom, the way that is was intended to be done was go to the Flight Plan to tell you which of the procedures to do, and then of course go to the checklist, you know, to accomplish that and the Flight Plan for the previous experiment - I mean the previous sample - did have a freeze in there, and there - I'm sure you've looked at it by now, but at about 156 hours and 20 minutes, it shows ETE terminate and that's after sample 4.

ACDR Roger.

CC-H So it - it - I can see how it could be misleading.

ACDR Houston, Apollo.

CC-H Go ahead, Tom.

00 38 30 ACDR Okay. There's one problem with - here in the checklist it says "Store [sic] the - remove the assembly from the ETE and store the assembly in the bag in the ETE." With the little sample tab on it, it won't fit in one of those slots. And I'm sure they don't want us to pull the sample out. They want us just to maybe break off the top half in the loop where you pull it out of the freezer. Check with them.

CC-H Okay. Stand by, please.

CC-H Tom, Houston. On your problems in stowing sample 4, Backroom thinks that by rotating it 90 degrees, you probably ought to be able to get it into that bag, but if you can't, don't worry about it. Just dispose of it in any tr - any of the trash bags.

ACDR To me that's a throwaway sample, huh, Dick? Can't we keep this one?

CC-H That's right. The sample 4 is the throwaway one. But that, of course, - that does not apply to the others.

ACDR ... we still have ... in the freezer already.

CC-H Yeah, Okay.

ACDR Just never understood ...

CC-H Okay.

ACDR Just never understood that we were supposed to bring back 4.

CC-H Roger.

00 46 13 CC-H Apollo, Houston. On panel 230, we need UP TELEMETRY to RELAY, if somebody can get it for us.

00 47 11 CC-H Apollo, Houston. On panel 3, we'd like to stop the DSE. You just go center on that FORWARD REWIND switch.

00 47 20 ACDR ... center.

CC-H Okay. Thanks.

00 47 38 CC-H And, Apollo, Houston. On panel 230, one more. I need the UP TELEMETRY switch to UP TELEMETRY, center position.

CC-H Apollo, Houston. We're about to dump the - continue the DSE dump, and so I'll be dropping out in 30 seconds. I'll call you back.

ACDR Okay.

CC-H Apollo, Houston. Back up on the air to ground.

DMP Okay. Do you think that one really went all right, Dick? Should've had good data.

CC-H Okay, Deke. We couldn't understand the comm - we had a problem in the comm there, and it looks like a COMMAND RESET was done in a procedure, and we were talking about - we didn't understand that.

ACDR Houston, Apollo.

CC-H Apollo, Houston. Go ahead.

00 55 24 ACDR Okay. I guess the secret is we're trying to coordinate everything real tight, and somebody asked - either myself - I don't know - whoever, or Vance, do we have a - do we have a COMMAND RESET? About that time Deke thought we'd called a COMMAND RESET.

CC-H (Chuckling)

ACDR Did that blow - did that blow your data?

CC-H No, we're doing our best to - It - Well, I guess we can't say right now. We're dumping the data now, and we'll get back to you. What we thought perhaps you had done was the sunset procedure instead of the sunrise procedure, because the sunset procedure does have a COMMAND RESET. But, at any rate, we've got the data on the ground and we'll take a good look at it.

ACDR Okay. Real good.

CC-H Okay.

ACDR ... question to ask since it was kind of a busy time.

CC-H Roger. Understand.

00 56 33 CC-H Apollo, Houston. It turns out we only lost - The impact of that was is we probably wrote over about 30 seconds of helium glow data and we got all the SAM data, so it looks like no problem.

ACDR Okay. Real good. Real good.

CC-H Roger.

ACDR Okay, Houston. Before we leave ATS, what time do they want me to hook up with that biomed data?

00 57 54 CC-H Okay, Tom. Here's the deal. On this next ATS pass, right at the AOS, we've got a little bit of DSE to dump, which is not going to take too many minutes. And after that, for the whole rest of that ATS pass we don't have anything that would interfere except for that SAM - there is some SAM operations there at sunrise. So my suggestion would be to - at ATS AOS would be to - for you to be prepared to do the exercise. And I'll let you know when the dump is over, and then you just let us know when you're starting and we can just watch it in real time, and we'll be all done with it.

ACDR Okay.

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ACDR Needless to say, if - -

00 58 45 ACDR Needless to say, if this data gets lost, the cabin temperature's going up by about 30 degrees if that request comes up again.

00 59 02 ACDR Roger.

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Time: 203:01:00 to 203:02:30
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ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

01 00 11 CC-H Apollo, Houston. We're about 1 minute from ATS LOS.
I'll give you a call here in about 4 minutes at Guam.
See you there.

01 00 15 CMP Okay, Dick.

01 04 03 CC-H Apollo, Houston. Guam for 7 minutes.

CC-H Apollo, Houston. Guam for 6 minutes.

DMP Okay.

CC-H Apollo, Houston. We're about a minute from LOS.
Rosman comes up at 157 plus 12. The SAM ops will
be very close to that time, so I thought I'd get
this comment to you now. The experiment people
said it would help them some, while they're watching
their real-time downlink data, if you give your
intervalometer voice marks on the air to ground.
See you at Rosman.

CMP Okay, we'll do.

01 10 11 CC-H Okay.

01 34 39 ACDR Hello, Houston; Apollo.

CC-H Apollo, Houston. Loud and clear, Tom. How me?

ACDR Okay. Real good. And we're only 40 seconds away
from starting the SAM, but again to confirm per
checklist, HIGH BIT RATE, RECORD, FORWARD, COMMAND,
and RESET to start it. Over.

CC-H That is affirm, Tom.

ACDR Roger.

01 35 23 CMP MARK it. Zero counting up.

01 36 23 CMP MARK. INTERVALOMETER, ON.

CC-H Okay. Vance, thank you.

01 37 53 CMP MARK. INTERVALOMETER, OFF.

CC-H Okay.

ACDR Okay.

CC-H Go ahead, Apollo.

ACDR Looks like everything went pretty good that time.

CC-H Hey, real fine. Thanks a lot.

CC-H And when you get around to it, I'll copy down your frame count.

ACDR Roger. 35.

CC-H Okay. Thanks a lot.

ACDR DET is 1 - is 157:16, Dick.

CC-H Okay.

ACDR Hello. Houston, Apollo.

CC-H Go ahead, Tom.

ACDR Okay. I want to stand by. I've about figured out - on out - ... get your - GO as far as go ahead on the exercise. I'm all set for it. The one thing we would like to know onboard is just how the experimenter's doing with his X-ray.

01 41 23 CC-H Okay. I tell you what, let me get back to you and get the story myself. I - I've - I haven't - I don't have it at my fingertips. We're about a minute from LOS. We'll see you at the ATS, and we will be ready to - as soon as we get data for you, to do the exercise, Tom. Be advised that we had real good data on that last SAM pass, and that was the highest priority SAM pass of all of them. We al - because we also had ground truth data with a balloon, and it went real well.

01 41 49 ACDR ... Real good.

01 45 48 CC-H Apollo, Houston through the satellite. How do you read?

ACDR 5 by, Dick.

CC-H Okay.

ACDR Tom's up there getting ready to do exercises.

CC-H Okay. Real fine. Then, let me check the - our data real quick.

CC-H Apollo, Houston. We're getting spacecraft data here in the building. I don't know if you're hooked up yet. We are not getting any biomade [sic] - med data. Are you hooked in yet, or not?

ACDR I am hooked in solid.

01 47 34 CC-H Okay. Stand by a second and let's - let me see if we can get biomed data, and - and we'll give you a GO, Tom. Hang on just a second.

01 48 15 ACDR Dick, everything's hooked up. SUIT POWER's on.

CC-H Okay. We have a couple of other controllers that are having a little problem with their data also. We're going to do something with the computers here, and I'll get right back to you. Hang on.

DMP Say, Dick. How do you read?

CC-H Loud and clear, Deke.

DMP Okay. Hey, did you guys - dump on that fish experiment, yet?

CC-H Stand by. Let me check with INCO.

CC-H Negative, Deke. We have not dumped the VTR that's got that on there.

DMP Okay.

CC-H What we had planned - -

DMP The reason I was curious - because - we just shot a few shots around the inside of the DM to give you an idea of what that ditty looks like right now. We thought - thought you might find it amusing.

CC-H I'm sorry, Deke. Say again, I didn't copy you.

DMP I said we shot a few random shots around the inside of the DM on that same tape; thought you might find it amusing.

01 50 35 CC-H Okay. We're looking forward to it. We're going to dump that while you're asleep tonight. Incidentally, we've - we've - taken a look at the data coming out of the spacecraft, and looks like we've got no biomed data on the downlink. And the only thing that I know to check is to make sure the SUIT POWER is on, which you've already reported there. Might check the connection.

ACDR Yeah.

ACDR Okay. What I can do, I can change leads here. I can go over to Vance's lead, since you got good data on him, this morning.

CC-H Okay. We might try that. They might - or a loose electrode or connector - I'm not sure what else to - to try. I think you got a good idea, Tom. Why don't you - why don't you check the connectors real quick, and then go over to Vance's, and let's see if we can get data from there.

ACDR I'm going to change comm cables with Vance.

CC-H Okay, Tom. We're standing by.

01 53 55 ACDR Okay. How do you read me on Vance's cable?

CC-H Okay. Let us look at the data again, and see if it's any better. Hang on.

ACDR And I've double checked all the connectors, too.

CC-H Okay, Tom. We're still not getting data. It's not coming out of the spacecraft, and we're sitting here thinking hard as to what else we could check that might be wrong. Stand by, please.

ACDR Okay.

ACDR Okay. Have you got HIGH BIT RATE, Dick, and all that?

CC-H It's affirm, Tom. We're getting - we're in the only ATS mode that we can get the biomed data on, on the

downlink, and the other indications on the downlink seem to be okay. It's just that one.

ACDR Well, I have double checked, and I've traded off with Vance, and he's checked me. And all the electrodes are on here.

01 55 43 CC-H Okay. We're - Neil and I are sitting here looking at the - the drawing now. Hang on.

CC-H Apollo, Houston. I don't know what you just did, but we are getting data now.

CC-H Apollo, Houston. I don't know if you copied me or not, but we have - we do have data now. It looks good to us. I don't know if you changed anything. We'd like to know if you did, but at any rate, you're clear to go ahead, Tom. We have data.

ACDR How do you read?

CC-H Tom, I read you loud and clear, now.

ACDR Did you read my last transmission?

CC-H No, I didn't. I called you a couple of times and I didn't get anything back. At any rate, we are getting good data now, I don't know what happened - what you did, if anything, but we're getting good data.

ACDR Yeah. Okay. What I said is, I opened up the biobelt at the bottom of it; I just started checking the cables around, they all felt tight, and then suddenly you said that we started getting it.

CC-H Okay. Maybe they - -

01 58 10 ACDR Okay. I'll go ahead.

CC-H Okay. Maybe it's something down there in the biobelt, but at any rate, right now we're getting good data, so press on. We - to tell you again, what we wanted was about 10 minutes of exercise and then about a 5 minute cooldown.

CC-H Apollo, Houston. Apparently we do have a short of some kind in the biobelt because as soon as you started exercising, the data became extremely poor and noisy. You might - you might - -

ACDR Is that right?

CC-H - - Yeah, you might look at the belt again. I'm not sure how we can help you, but at any rate, as soon as you exercised, we got ratty data.

01 59 17 ACDR Let me look at it again down there.

CC-H Okay.

ACDR The only thing I can think of, when I exercised yesterday - actually, I'm up - I'm up in the docking module - brought it up here - I'm using that strap between these two rails to tie me down, and of course, it goes across the belt sometimes. Of course, you move back and forth. Okay. I'm going to start to move these around. Does that get any better?

CC-H Okay. Stand by just a second.

ACDR Get any better, Dick? Over.

CC-H Tom, it - every now and then it'll jump in and have just a little bit of data and - and just a couple of beeps, and then it gets bad again. How much trouble would it be to switch biobelts, to Vance's that you had today?

ACDR It would take me - it would take about 15 minutes to get down there and - his is in the bottom of - of his lockers down there. I'll go get one.

CC-H Okay.

ACDR I'll have to put it all together.

02 01 14 CC-H Okay. I don't know what else to do, Tom. Since we've already - you've already invested this much time, maybe what we ought to do is go ahead and start our - our DSE dump. And you - get his biobelt and then towards the tailend of the ATS pass, we still have 40 minutes left in the ATS pass, maybe we can try again a little bit later. So if you would do that - -

ACDR All right.

CC-H Okay. Why don't you do that? And when you're squared away again, let's try it again.

ACDR Okay. I'll go change out with Vance.

CC-H Okay. Thank you.

DMP Hey, Dick. I recollect that the data I got was no good either. Is that right? In other words, you don't like my belt?

02 02 58 CC-H Deke, let me check with the surgeon. Stand by just a second.

CC-H Deke, about all we can say was we did not get very good data on you in the first exercise period, but we don't - I don't have any reason to believe that it was your biobelt. It - it may have been instrumentation leads, but at any rate, we did get good exercise data on Vance. So, I'd say your belt is an unknown at this point.

ACDR Hey, Dick. We're getting things unraveled here. Look, this morning Vance was in a hurry, and he used my belt. Now, what happens, when we take this exercise, the only way you could hold yourself down using this thing, you put a big strap across [sic] your waist; and it's right where that biobelt is, and you're putting a hell of a strain on it. Over.

CC-H Roger. I copied, and I'm not sure what to - to respond. Stand by just a second.

ACDR (Laughter) We expect this - Vance used my belt this morning, it was good, but he used it quite awhile. And I'm sure my data was probably pretty good, but again, that - that big strap goes right across where that belt is. There's no way to avoid it using this exercise to hold yourself down. Over.

CC-H (Laughter) Roger. Stand by.

CMP So it was good this morning.

02 04 22 CC-H Okay. Copy.

02 07 40 ACDR Hello, Dick.

CC-H Yes, sir. Go ahead.

ACDR Okay. I got Deke's biobelt here and his accessory bag, and I'll start changing it out. Vance used mine because his was stowed away someplace and couldn't get ahold of it this morning, and can't remember right now, at this period in time. And he's all set up on the SAM pass, so I'll take Deke's, and that'll give you a data point anyway.

CC-H Okay. That's - I was just getting ready to call you and - to try that. It turned out that there was some problem in getting good data on Vance this morning. We ended up getting a good pass, but it just may be that your belt does have some sort of a short in it, and I guess we can prove it if you'll take the trouble to put on Deke's and let us look at that.

ACDR I'll put it on now, but again let me point out, the exercise we're taking here with this big shoulder strap and leg strap - and you have to tie yourself down or you'll flip all over the place. And that's the big belt you wear, you slide up and down, and that biobelt gets rubbed with it all the time. Over.

CC-H Okay. Why don't you - I copy - And why don't you go ahead and put on Deke's, and let me know when you're ready.

02 08 47 ACDR In works.

USA Apollo, Houston. One comment ...

USA Okay, Houston. If we ... Bravo 2 ...

CC-H Okay.

CMP Say, Dick.

CC-H Go ahead.

CMP Yeah. On this SAM sunrise, you want to go back to normal cutoff time, 1 minute, right? Instead of 3 minutes?

CC-H No. As a matter of fact, I just got an input that on this one, we wanted to let the camera run out of film. We wanted to use it all up.

DMP Okay. Fine.

CC-H Okay.

DMP Okay. We'll just let her run.

ACDR Okay, Deke - Dick. I'm on Deke's biobelt, but don't say anything, because it distracts the SAM. But, you can just look at it for a while.

CC-H Okay.

02 14 10 CMP MARK. Zero.

CC-H Okay.

CMP 1.

02 14 41 CMP MARK. INTERVALOMETER, ON.

CC-H Roger.

02 15 10 CMP MARK. 1 minute.

CC-H Roger.

02 17 11 CMP MARK. 3 minutes.

CMP Okay. I guess that's it.

CC-H Okay, Vance. Thank's a lot.

CMP Roger.

CC-H And, Apollo, Houston. Tom, we have seen no data since - since you called me before that SAM pass started. I think you did tell me that you have on Deke's belt. We - And I assume you have not changed the leads.

CC-H Apollo, Houston. How do you read?

ACDR Loud and clear.

02 18 35 CC-H Tom, I'm not sure if you copied me there. We are not getting data. I'm assuming you do have on Deke's biobelt, and I'm also assuming that you did not change leads. Is that correct?

ACDR That's affirmative. I thought you read me when I talked to you there before, Dick. Sorry, didn't you hear me when I said I changed them out and had everything hooked up?

CC-H Yeah, I heard you, and then I kept quiet through the SAM pass, and I was just verifying what configuration we're in, because we are not getting any data at all now.

ACDR Okay. The only other thing I can think of is going to be the comm carrier, and I'll change out a comm carrier and that way I'll have changed out every couple. Except both leads, which I doubt are bad.

CC-H Yeah. Understand. Okay. We'll stand by while you do that then. I think we're going to - we have 20 more minutes left in the ATS pass. So why don't you do that and call me back. And, if we don't have any luck there, we'll probably just give it up for now.

ACDR Okay.

02 20 31 ACDR Okay, I'm hooked up to Deke's helmet, and his comm lead, and I'll be hooking up the belt.

CC-H Okay. We're looking at the data.

ACDR Okay. I'm hooked up on another belt.

CC-H Okay. Incidentally, I meant to call. If Vance has not already done the VERB 49 maneuver to the sleep attitude, we want him to delay that just to make sure we kept this ATS pass, since we have a good lockup now.

ACDR Okay.

CMP Okay. We'll hold it.

CC-H Okay. Thanks, Vance.

ACDR Okay. I'm on Deke's comm lead, Deke's belt, and my sensors.

CC-H Apollo, Houston. We just picked up biomed data. I don't know if you did anything different in the last 10 seconds or so, but - we have it now.

ACDR Negative. I haven't done a thing since that time I told you I was hooked up on Deke's biomed.

CC-H Okay. I'd recommend that you not start exercising here for a few minutes and let us see what happens to the data. Maybe we can troubleshoot a little better while we have it.

ACDR Okay.

ACDR All right.

02 23 46 CC-H Okay, Tom. We've gotten a little bit of data here while you're being still. We'd recommend you go ahead and start exercising, and if we - if we lose it when you do start exercising, we're going to knock off the drill, at any rate. So why don't you go ahead and do your exercise period now.

ACDR All right. Okay. How do you read me?

CC-H Loud and clear, Tom.

02 24 13 ACDR Okay. I'll start.

CC-H Okay.

02 27 59 CC-H Apollo, Houston for Tom. If Tom, if you're still listening, as soon as you started exercising, we - or shortly thereafter, we did lose data. We still have about 5 minutes left in this pass, so anytime you're ready to quit, we'd recommend knocking it off when you're ready - before LOS - and we'll watch - if we do get data back, at least we'll be able to watch you recover.

ACDR Okay. I just stopped exercising when you called
 me there.

02 28 28 CC-H Okay. Real fine, Tom. And we're getting good
 data again, as soon as you stopped.

END OF TAPE

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

02 30 00 CC-H Apollo, Houston. Vance, we think you may - we think you may have missed a jet or two in the configuration there. How about rechecking it again? It's in the Flight Plan at 157 plus 57.

CMP Okay, it says inhibit all jets except D1, B2, and C - -

CMP Okay, that's better - - -

CC-H Okay, it looks - -

CMP - - I knew it was a standard ones, but I thought you were trying to get me into some other configuration, and I couldn't figure it out. Okay.

CC-H Okay, and we're pretty slippery down here. Yeah, we - we agree with it now. Looks good.

CC-H Apollo, Houston. Tom, the biomed data is noisy. One thing that the Surgeon would like you to do is just not change the leads, of course, but just press them, and see if that improves the quality of the data.

02 32 12 ACDR Okay, what did you want me to press?

CC-H Just press the leads - that are attached to you, and see if that improves the quality of the data.

ACDR All right, here goes the ground lead, press; sternum lead, press; left lead, press; left respiratory lead, press; right lead, press.

CC-H Okay, Tom, Flight said to just sit still here for a couple of minutes, and the examination will be all through.

ACDR All right.

02 34 17 CC-H Tom, Houston. Thanks very much for putting up with us. We got enough data there to satisfy the objective, I hope, at any rate, even though we didn't get any while you were exercising. We're about 5 minutes to LOS, so we're going to switch to a DSE dump mode. So thank you much.

ACDR Okay, Dick. Roger. Do you read me okay?

02 34 36 CC-H Yeah, I'm reading you loud and clear. And also for
Vance, now that we've got that, I guess that we can
go ahead with this VERB 49 maneuver.

ACDR Roger.

CMP Okay, see you later.

CC-H Apollo, Houston for Deke. We see the - SAM shutdown
going on, Deke - or already having gone on. The -
just a reminder, be sure and get the furnace ops -
before you eat if you would, because of, you're sort
of on a tight time schedule there.

CMP We'll pass the word on to him.

CC-H Okay, thanks.

CMP Houston, Apollo.

CC-H Go ahead.

CMP Say again what you want Deke to get done, before he
eats.

CC-H Oh, we just - wanted we - we saw that the furnace
was not operating, but he was doing the SAM shutdown.
Just wanted to remind him to be sure and get the
furnace before too long, because it is sort of time
critical.

02 37 26 CMP Okay, he's going to have a word with you here.

CC-H Okay.

CC-H And, Apollo, Houston. While Deke's coming on the
line there, we're 2 minutes to LOS. Goldstone comes
up at 158 plus 39.

DMP Okay, Dick. I'm on the air here. What was it that
you were talking about?

CC-H Oh, Deke, the Experiment Officer was looking at his
data, and saw that you were in the SAM shutdown,
which was fine. But he had not seen the furnace ops

or the furnace starting up yet, and just wanted me to remind you to not miss that, because it was a little time critical, before you all start eating.

DMP Okay. Yeah, we've been scratching around here trying to find flash attachment for the PAO pictures of the SAM. And - would they be happy if we shot them with the same kind of stuff that we're shooting the crystal growth and ZFF with, I wonder?

CC-H Rog. We're going to have to - we're about to go LOS here, Deke. And I'll be back with you at Goldstone, 158 plus 38 - 9.

DMP Okay, we'll go to the furnace, and forget the SAM for now.

02 38 40 CC-H Okay.

03 00 59 CC-H Apollo, Houston through Goldstone for 4 minutes.

ACDR Roger. Read you loud and clear.

CC-H Okay.

ACDR Sorry you have to miss that Soyuz splashdown party the group is going to tonight.

CC-H I'm sorry. I'm missing it, too, as a matter of fact.

ACDR Well, I'm sure that Crip, George Evans, and a few others and Bo will represent you real well there.

CC-H Well, as a matter of fact - You still there, Tom?

ACDR Yeah. Go ahead.

CC-H Okay. As a matter of fact, George just walked in. He's sitting right here. So he claims he didn't go to it. He says he played a softball game.

ACDR Oh, I see. Tell him hello.

03 01 52 CC-H Roger. George says hello. He also says Nukowski [?] says hello.

ACDR Thanks. Thanks. (Laughter)

CC-H Roger. (Laughter)

DMP Hello, Dick. Do you read?

CC-H Loud and clear, Deke. And I was just getting ready to tell you, if you never did find the flashgun, we'd be satisfied to take those photos with a crystal growth setup.

DMP Okay. Yeah, I did find in the experiments, also, that there's only room for about one guy working up in that DM. So kind of keep that in mind when you got somebody up there trying to do something that they can't do anything else.

CC-H Okay. I'll - I will, Deke And you were very weak and might put the mike a little closer to your mouth.

DMP Okay. That's all I had anyway.

CC-H I guess you're just winding down at the end of a long day.

DMP I think I already have.

ACDR And, Dick, whenever you get a chance, did you get much information - I guess on status of all experiments? Evidently, the - the helium glow and EUV are coming along real good, but the X-ray's the one that's having the problems. Over.

CC-H That is affirm, Tom. And since you asked the question, the Experiments Officer is putting together a little history of what we've done on X-ray, and where we stand now, and where we think we're going. And this evening before we go to bed, I'll have it for you

ACDR Rog. Real good. Thank you.

CC-H Okay. And we're about 1 minute from LOS. I'll see you at Quito in 158 plus 51.

CMP See you later.

03 03 58 CC-H Okay.

03 13 45 CC-H Apollo, Houston. Quito for 5 minutes.

ACDR Hello there.

CC-H Hello there again.

ACDR Well, we're still eating chow here, Dick.

CC-H Well, good; enjoy it. We - we had Chinese food this evening, courtesy of Al Ong, who is in - in the EECOM back room. So, you enjoy yours, and we're standing by.

ACDR Okay. That sound great.

CC-H It was.

ACDR Oh, Dick; one thing. Over.

CC-H Go ahead.

ACDR Yeah. When you dump that tape tonight, of the fish in the docking module?

CC-H Yeah.

ACDR Yeah. Be sure you show Glynn Lunney and - Vance, anyway, shot a picture of the docking index angle; be sure you show that to Lunney.

03 14 54 CC-H Okay. We'll be sure and do it.

CC-H Apollo, Houston. We're 1 minute from LOS. We'll see you when you get locked up on the ATS. And if you guys are still eating, I've got some news for you, if you'd like to hear it.

ACDR Yeah. We'd love to hear it.

CC-H Okay. When we get locked up on ATS, Tom, I'll be prepared to read it up to you.

03 18 34 ACDR All righty. Thank you.

03 25 10 CC-H Apollo, Houston through the satellite.

CC-H Apollo, Houston. We're AOS through the ATS.

ACDR Got you, Dick.

CC-H And we need ACCEPT so we can get up the evening loads. And we were just too late to catch the P52, so we'll need that data.

ACDR You've got ACCEPT now. We have the data.

CC-H Okay.

ACDR All righty. Star 1 01, star 2 41; NOUN 05, all zeros, plus 11.0, minus 10.7, minus 26. Torqued at 159:01:50. Over.

CC-H Okay, Tom. I've got that, and I've got the news, if you'd like to hear it.

ACDR Okay. Wait until Vance gets down here, so he can hear it.

CC-H Okay. Fine. We're certainly in no hurry to read it up, but I've got it here when you get ready.

ACDR Okay. Sounds great.

ACDR Wow, things are going great up here. It's just been kind of a busy day.

03 26 44 CC-H Sure has. I'll agree with you. We're - we're very satisfied down here, too, and I've got this - some data on the science status as of tonight, and I'll have that to read to you also.

ACDR Okay. Real good.

CC-H Apollo, Houston. During the P52, we drifted out of attitude a little bit. We'd recommend doing a quick VERB 49 maneuver back to the same attitude and tweak it up, and then we'll finish up our uplinks.

CMP Roger.

ACDR Do it right now.

CC-H Okay. Thanks a lot.

03 31 41 ACDR Okay, Dick. Vance is back. He's changing the LiOH canister, but he's on the headset, so you can go ahead and give us the news and science status. Over.

CC-H Okay. First of all, why don't I -

ACDR I'll get the VERB - -

CC-H I'm sorry. Go ahead.

ACDR I got this VERB 49 going.

CC-H Okay. Real fine. Thanks a lot, Tom. Why don't I give you the science status first, and then I'll read you the news. The current status of the X-ray is that one of the two cal sources is stuck within the field of view. We are able to operate for short periods of time, by that I mean about 30 seconds to a few minutes, and we believe the problem with the high counts is in the high-voltage section, some time - type of leakage, either in the high-voltage supply or inside the detector itself. We do plan to do revs 104 and 105 tomorrow with some mods to the pads, and these mods, essentially, will have you to turn on the high voltage, on and off during the pass, similar to what you did tonight in the X-ray tests. And the reason for that was, is the longer it stays on, we cease getting good data. So we need to turn it off and then get it back on. The PI passed - -

ACDR Okay.

CC-H And the PI passed his word - out to the front room that he thanks you for all the malfunction procedures you have performed. You've done everything short of dismantling the hardware.

03 33 09 ACDR Okay. That's what we're here for.

CC-H Roger. Well, we appreciate it. To review quickly the other service module experiments, the EUV, the helium glow, and the SAM data has been excellent quality, and the PIs are very pleased. On the geo experiment, we've got about double the planned data that we had hoped to get. And even with the problems that we have had on X-ray, we have seen at least two sources, so we're hoping to improve on that in the next day or so. The furnace is looking good - -

ACDR All right.

CC-H - - and we're happy with the way the furnace is going. And in general for this, you know, after only being here in the science mode for a couple of days, we think we're getting an excellent science return, and

we've got a couple of more days to - to do even better, and we're looking forward to them.

ACDR Sounds real good.

03 34 08 CC-H Okay. Stand by.

CC-H Okay. Here's some news for you. Postal workers won a 3-year contract that will provide scheduled raises totaling \$1500 over 3 years, plus continued cost-of-living increases. By the third year of the contract, which covers about 600 000 workers, the additional cost to the postal service will be about \$900 000 000 per year. Here's an interesting one that came from a Beirut newspaper today. Egypt - and that newspaper says that Egypt and Israel have agreed to a 3-year truce, under which U.S. troops will operate electronic listening posts in the Sinai Desert, and Israel will pull back from key mountain passes and the oil fields in the Sinai, and this came from the Beirut newspaper Al Anwar. A closely divided House of Representatives will vote this week on whether to resume military assistance to Turkey. Both supporters and opponents view the measure as the most important foreign policy vote in this Congress. At Capitol Hill, observers report the most intense foreign policy lobbying in recent years. William Peter Blatty, author of the best selling novel, "The Exorcist," and amateur tennis star Linda Tuero were married today in Las Vegas. Blatty, 47, and Miss Tuero, 23, of New Orleans, were married Sunday. Asked by friends why he decided to marry, he replied, "An angel made me do it."

ACDR In Las Vegas, huh?

CC-H That's right.

MCC-H (Laughter).

03 35 52 CC-H In Montreal, six men tried to rob an estimated \$10 to \$12 million from a Wells Fargo warehouse Sunday but tripped an alarm and fled empty-handed, police said today. "It was straight out of Mission Impossible," a police spokesman said, referring to pneumatic drills, explosives, gas masks, and walkie-talkies the men left behind. "They were so cool, they stopped and had a Coke from our machine and

even paid for it," the Wells Fargo official said, "I guess they had thought they had all day." One thing that's kind of interesting - that you guys might have an opportunity to look down tomorrow when you're in the right place and see - around Key West, an unbelievable oil slick, a hundred miles long and up to 15 miles wide, was reported today in the Atlantic Ocean off the lower Florida Keys. The origin of the mass was not know. After incoming pilots reported sighting the huge oil patches in the water off the lower Keys, the Coast Guard sent up planes to investigate. They found the slick stretched from Marathon in the middle Keys to the Tortugas Islands about 65 miles west of here, a distance of about 100 miles. A Coast Guard spokesman said the slick was formed of an estimated 40 000 to 60 000 gallons of what appeared to be bunker C or crude oil. On the sports scene, running back Duane Thomas and tight end Marv Fleming are among the missing veterans in the NFL Washington Redskins' camp. Thomas reportedly wants \$168 000 for a 1-year contract, while Fleming, signed by Miami before the Dolphins traded him to the Redskins last month, failed to show following a rookie scrimmage with the Baltimore Colts Saturday night. Their opponents were the ones once immortalized by the label "the Amazings," but that label belonged to the Houston Astros, at least for a day. Amazing, it seems, how a team could blow two commanding leads, both coming from - coming after two men were out, to lose to the Mets 10 to 9 yesterday. And that closes out the news, Tom.

ACDR Okay. Sure appreciate the latest data down here on the Earth.

CC-H Okay. It was - -

DMP Hey - -

CC-H Go ahead.

03 38 21 DMP Dick, I was just going to comm - comment on that oil slick. We did have one pass where we might have had an opportunity to see it, but that whole area was cloud covered and at quite an oblique to us. If we get a better position tomorrow, you might give us a little lead time - and maybe some pointing directions.

CC-H I'll do that, Deke. I'll pass the word down the line and tomorrow Crip might - will give you a call if you're passed close by and let you look out the window and see if you can see it.

DMP Okay.

CC-H We've got about a half an hour before bedtime. I don't know what y'all are doing, but whenever you get ready, I've got three or four things that I wanted to read up to you. And also I could get the - presleep battery readings and so forth.

CMP Sounds good. Got a little free time here, Crip. What do you need to copy into - I mean, Dick, Dick.

CC-H That's okay. Okay, I need - in the presleep, I need the battery readings, and I've got some changes early in the morning in the Flight Plan at a time of about 168 hours.

03 39 32 DMP Stand by for the batteries. I got it covered up with my food tray right now. I'll give it to you in a little bit.

CC-H Okay. No problem. I'll remind you.

CMP Just a note of interest. You remember how the toes of slippers used to wear out on crewmen in Skylab?

CC-H Roger. I sure do.

DMP Same thing's happening up here. It's kind of amazing, too, because we don't really have things to - to stick our toes into. But mine completely came out into full bloom and Deke's are starting to, too.

CC-H Roger. Copy. Yes, I do remember that.

03 40 14 CMP Okay. What page, Dick?

CC-H It's about - it's tomorrow morning at a time of about 168 hours. The page number's 4.3-43.

CMP Okay. Go ahead.

CC-H Okay. First of all, is - at right up there at the top in AC's column. That P20 maneuver in preparation

for the Earth resources, again, I want to change NOUN 78, center value, to read plus 06 three balls instead of plus 09 three balls.

CMP Okay.

CC-H And below that, under the DP's column, about 10 minutes down - the high gain - I want to change the angles to read pitch, minus 4; yaw, 311.

CMP Minus 4 and 311.

CC-H Okay. If you'll turn the page, at 170 hours, I want to change those pitch angles - those high-gain angles there in the DP's column - to read the same: pitch, minus 4; yaw, 311.

03 41 30 CMP Got it.

CC-H Okay. If you've got that, Vance, if you'll turn back a couple of pages. This is during the rest period, at about 167 hours, you might - this is the same thing as last night. Incidentally, what we're doing is, we're giving up a couple of ATS passes during the evening that we don't need in order to save some propellant for that satellite. As you know, it's got a 2 CM - CMG that's lost. You will have no ATS capability during that pass at 167 hours, so that contingency comm attitude that's listed there is no good to you. And the same is true on the previous page at 165-1/2 hours.

CMP Okay. Got it. CMG's can be big problems as I recall.

CC-H Me, too. Okay. One thing we wanted to verify, and that was that you haven't changed the configuration in the docking module that I had you go to last night. And that is go to the REFERENCE to VACUUM and the LOW PRESSURE RELIEF to AUTO to back up the cabin pressure relief.

CMP Stand by. I'll ask around.

ACDR No, nope, I haven't - -

DMP No, it's all the same.

CMP No - no one has touched it.

03 42 43 CC-H Okay. Good. We do want to get a waste water dump tonight. What we'd like to do is two things: we'd like the POTABLE TANK INLET to OPEN; and we'd also like to dump the waste water for 4 minutes.

CMP Okay. And we'll leave the POTABLE OPEN after that and let it accumulate in the - or flush through the potable tank.

CC-H Okay. And if - and we're watching our data now, so if you'd go ahead and start that waste water dump, we'll be able to watch it with - with you and, again, that's 4 minutes.

CMP Okay, 4 minutes.

CC-H Yeah. If you'll give us a mark when you start, we'd appreciate it.

CMP Okay.

CC-H And I've got one more thing in front of me. And that is, I'd like to read you up a block data pad in the Updates Book for rev 123.

CMP Just a second, Dick. Be right with you.

CC-H Okay.

03 44 07 CMP Okay, MARK on the beginning of the waste water dump, and we're OPENING the POTABLE INLET.

CC-H Okay. Real fine.

CMP Okay. And go on.

CC-H I - I have a up - a block data pad for you in the Updates Book.

CMP Okay.

CC-H Incidentally, while you're looking for the Updates Book, have you had a chance yet to sequentially try out each of the audio centers and see if that affects the tone that you - the loudness of the tone you hear?

CMP Yes, we did. Let's see - yeah, Deke has the data for you here.

DMP Yeah. We don't hear it on panel 9 or 6. It appears that panel 10 is the only one it's coming through on.

03 45 08 CC-H Okay. That is a good data point. Understand panel 6 and 9, you don't hear anything. Panel 10 is the only thing, and I - we'll think about that one a lot. It's a good thing we tried it.

DMP Right.

03 46 37 DMP Hey, Crip, you wanted our batteries; they're all 37 volts.

CC-H All 37. Okay, Deke. Thank you much.

DMP Right.

CC-H And after we - after we get the uplinks up there, we'll be getting a VERB 74 from you.

DMP Okay.

CMP Okay, Dick. I have the block data book.

CC-H Okay. When you're ready to copy in a minute, I'll start with NOUN 33.

CMP Okay. And this is which rev?

CC-H This is rev 123.

CMP Okay. Ready to go.

CC H Okay. 200:36:49; minus 194.2, plus four balls, plus 018.0; 359, 330, 003; 177.0; 00:07; 199, 1605.6, 25751, 23:31; 26:50. And if we'll stop right there, we're about to stop the - we'd like to stop the waste water dump right here.

CMP The dump.

03 48 40 CMP Okay. The dump is stopped, and - go on with your readback, if you wish.

CC-H Okay, fine, Vance, the - -

CMP Or your readout.

CC-H Yeah. Right. Okay, the NOUN 66 is NA. I'm starting them again with bank angle: 312/053, 32:32, 35:24; plus 22:00, minus 161.73. Go ahead.

CMP Okay. Rev 123 readback. 200:36:49; minus 194.2, plus all zips, plus 018.0; 359, 330, 003; 177.0; three zips 7; 199, 1605.6, 25751, 25:31; 26:50, NA; 312/053, 32:32, 35:24; plus 22.0, minus 161.73.

03 49 58 CC-H Okay. And I got a couple of notes for you. The - at SCS - at CM/SM sep, we want you to yaw right to 048 degrees. Note number 2, a NOUN 48 pitch trim, minus .20; yaw trim, minus .82. And the two weights: the CSM weight, 25690; the DM weight, 4500. Go ahead.

CMP CS - CM/SM sep, yaw right; 048 degrees on the ball; NOUN 48 pitch, minus .20; yaw, minus .82; weight CSM 25690, and DM, 4500.

CC-H Okay. And guidance is through with the uplink. The computer is yours, you can go back to BLOCK, and we're ready for the VERB 74.

CMP Okay. We'll give it to you in just a second.

CMP Do you need ACCEPT for a VERB 74?

CC-H Negative. We do not.

CMP Okay.

03 51 30 CMP Okay. You have it.

CC-H Okay.

CMP And we have a question about using bags versus direct over-the-side urine dumping here.

CC-H Okay. Go ahead.

CMP Of course, we understand that whenever SIM bay is in operation or about to be operated that - collection is required. And - I note in the Flight Plan - it seems to assume that the only time during this experiment period that you can do anything other than collect is during bag dump times, like early this morning. I

must admit that I'm a little confused on the philosophy because it seems like the only time it should be necessary to collect is when you're - when you have the SIM bay open - or any cover open - or any experiment affected by contamination going. Could you clarify the rule for me?

CC-H Okay. I'll tell you what, Vance, let us research it and get you a straight answer back up.

CMP Okay. Yeah, like - okay, like for example, tonight, it seems like everything's closed up tight. No reason to store tonight at all.

CC-H Okay. Stand by just a second.

03 53 36 CC-H Vance, Houston. The rule, as I'm told, is simple. You cannot dump closer than 15 minutes to any cover on the various experiments coming open. So, for example, right now, there's no problem at all in going ahead and dumping.

CMP Okay. Well, that's kind of what we've assumed.

CC-H Okay.

CMP Yet, I think - the only thing that brought the question up was that we had a dump period early this morning, and it seems like, you know, we could be dumping like now or anytime.

CC H Yeah. You're right. Hey, listen. One question that I had. We haven't seen a change in the - in the partial pressure. Have you done a LiOH canister change?

CMP Yes, I have. I just completed it.

CC-H Okay. Fine. I tell you what, we - -

CMP About 10 minutes.

CC-H Okay. Copy. We've got about 20 minutes left in this ATS pass, and I'm standing by, but I've been through my complete list of data. If I think of anything else, I'll be calling you again, but I'm satisfied with my list.

03 54 50 CMP Okay. Very good. Thanks for the news. And we have a few more things to do around here tonight, and then we'll be winding down again.

CC-H Okay. Great.

03 55 43 CC-H Apollo, Houston.

CMP Go ahead.

CC-H Vance, somebody pointed out to me a good - an easy way to look at the Flight Plan and determine if it's okay to do a urine dump, and that is, anytime you find a period after the entry, "Activate primary evaporator," and before the next entry that says, "Deactivate the primary evaporator," in our present steam duct configuration, you can't activate the primary evaporator, but you could do a urine dump. So if you're ever in doubt, that's one quick way to check because those times have been carefully checked against the experiment pads.

CMP Okay. Very good.

CC-H Roger.

ACDR Dick, speaking of the evaporator, do our ECS friends think we're ever going to get that bear alive again or not? Over.

03 56 39 CC-H Let me get - let me get us an official answer. When I was back in their backroom awhile ago, they were talking about possibly having the problem cured sometime tomorrow, but I'm really not up on it. I'll get back to you.

ACDR Okay.

CMP Just one - just one point. You know, we won't probably be asleep for another hour and a half or so, at least. We could certainly go into an attitude to point that duct at the Sun for a while.

CC-H Vance, we've had a lot of discussion in the last couple of nights about an attitude that would work, but it just turns out that we don't think it would do any good, and we're a little close on RCS propellant on maneuvers anyway. It turns out that where

it's frozen is not accessible to exterior sunlight, and so that just wouldn't cure the problem.

CMP Okay. And how are we standing, incidentally, on RCS these days. I haven't asked for about 2 or 3 days.

03 57 44 CC-H Well, I'm looking at the plot, and it's - and it's - we're just a hair above the experiment redline, and what that means is is that assuming that we hold our own, which we have been doing ever - in - just about ever since we got into the experiment phase, we should be able to complete all our desired experiment objectives on the nominal time line to the end of the mission.

CC-H And, of course, that - -

CMP Okay. Good.

CC-H And, of course, that still maintains the deorbit redlines.

03 58 20 CMP Fine.

ACDR Houston, Apollo.

CC-H Apollo, Houston. Go ahead.

ACDR Roger, Dick. The one thing now - I think needs clarifying as far as the overboard dumps and the SIM bay experiments, you know - what about the - for sleep tonight? In other words, the battery vent is naturally open. Do they want us to put on that elbow for the waste management drain, and let - have that dumped overboard for the night? Over.

ACDR In other words, it's kind of a little cabin purge.

CC-H Tom, negative. We do not - we do not want a purge.

03 59 45 ACDR Okay.

END OF TAPE

Day 203

TAG Tape 203-03/T-37
Time: 203:04:00 to 203:05:30
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

04 00 01 CC-H Incidentally, Tom, we were talking off the loop here about the evaporators. We're not sure that we're going to get the - during the mission here, we're not sure if we're ever going to get the use of the primary evaporator back or not. Time will tell. We are - we do think that we'll be able to try the secondary evaporator tomorrow morning. We're waiting on the steam duct temperature to get up to 70 degrees. It's been rising, and presently it's at 63 degrees. We think it'll be high enough in the morning.

ACDR That sounds good. Thank you.

04 00 28 CC-H Okay.

04 01 55 CMP Houston, Apollo.

CC-H Go ahead, Vance.

CMP Just a kind of a little item for the visual observations people, in particular oceanographic. We've talked a lot with them about gyres and eddies and that sort of thing. And something that I saw yesterday that I didn't think to report until just now, although I did report on tape, I think, was the fact that just south of Hawaii, there was a line of circles, you might say, running east to west. And it looked like a line of circles - like a chain, you might say. And if you looked at one of those - and you could see them only because of the clouds - and it just made us wonder if maybe that was - perhaps the boundary of a current.

CC-H Okay, Vance. I copied that, and we'll pass it to those guys and see what they think.

CMP Okay. Must have been 100 miles long, or maybe 200.

CC-H Okay. Copy.

04 03 27 CC-H Apollo, Houston. We'd like the three POW - VTR POWER switches on panel 400 to ON so we can be dumping that tape recorder tonight.

CC-H And we'll sleep with them ON.

CMP Okay, will that be - dumping be going on most of the night, or will it be finished in a couple of hours?

CC-H I'm not real sure what the schedule is. Hang on.

CC-H Vance, Houston. We're not going to be dumping the VTR for about 4 hours, at about 163 hours.

CMP Okay. It's kind of like a little heater in here, and that's - that was the only reason. But it's not that much of a problem.

CC-H Okay. One other thing, we'd like to sleep with the - with the door to the LiOH canisters area open again. That's panel - down around panel 350. And that's again to allow some heat to get in and around the steam duct. And I have one question about the check that you all did to determine that panel 10 audio tone - the tone was working when you listened to panel 10. We just wanted to make sure that that check was done on the headset and not the speaker box.

CMP That's correct, Dick. That's verified. It was on the headset.

CC-H Okay. Was the tone that you heard on - on the headset on panel 10 - was it a normal tone, or was it still also of low volume?

CMP It was -- very normal.

CC-H Okay.

04 05 48 CMP Even - even louder than normal. Well - well, certainly not weaker. It was normal, certainly not weaker.

CC-H Okay. We'll be thinking about that one over the night, and - and if we can think of anything that'll help the situation, we'll be getting back to you in the morning.

CMP Okay.

Day 203

04 08 08 CC-H Apollo, Houston. One thing, we still haven't seen indications that that LiOH canister has been changed, even though obviously you have changed it. Wonder if you'd check to make sure that that DIVERTER VALVE down there is in BOTH.

CMP Yes, it is. We have the door open; we can see it. And Tom's jiggling it.

CC-H Okay; thank you.

DMP ..., Dick, I'm happy to report we've found our flash attachment again.

CC-H Hey, good. I imagine up there you got so many little things that, at any given time, about four of them are lost.

DMP Yeah, everything disappears, but it all shows up sooner or later.

CC-H Roger.

04 11 38 ACDR Houston, Apollo.

CC-H Go ahead, Tom.

ACDR Yeah, I just wondered how the weather is down in Houston. Over.

CC-H Well, I haven't seen it for about 8 hours, but when I came to - over here to the MOCR this afternoon, it was a beautiful warm sunny day. We had a little rain in downtown Houston, but it was really pretty. And Bo - -

ACDR Very good.

CC-H And Bo is here, and he's going to be taking over for the midwatch. And he just got here and said it's still pretty outside.

ACDR Hey, that sounds great. Thank you.

CC-H Okay.

DMP Dick, you still there?

CC-H Sure am. We've got about another 3 minutes.

DMP Okay. One question then. If it doesn't get answered now, you can have the experimenters look at it. Is there any other magazine, DAC 16, we could use for shooting the fish experiment? I shot up all of 128 today - I mean yesterday, and Tom used part of 129. So we've probably got enough to do one more day, but - and we'll need another magazine, I believe.

CC-H Okay; we'll have an answer for you in the morning.

DMP Okay; no big deal.

04 13 20 CC-H Okay. And we're a couple of minutes to ATS LOS, and this is the good-night pass. We'll be calling you first thing in the morning. And if you want to do a voice check or call us for anything, we'll be standing by for - that you can just look in the Flight Plan and see where we're going to have AOSs for the next couple of hours or so. Be sure and sleep with the sleep - speaker box on, and we'll see you in the morning.

DMP Okay. (Good night.)

ACDR Real good. Thank you now.

04 13 58 CC-H Rog. Good night.

END OF TAPE

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

12 20 36 CC-H Apollo, Houston through Vanguard for 3-1/2 minutes.
Good morning. Apollo, Houston through Vanguard for
3 minutes. Good morning.

(Music: "Cigarettes and Whiskey and Wild, Wild Women")

12 21 37 ACDR Sounds like a little different atmosphere than what
we're living in.

CC-H Roger. We have a little bit over 2 minutes until
LOS here.

ACDR Okay, Bo. I got up a couple of minutes early and
turned off the jet monitor and all that and got the
VTR POWER OFF, and the TELEMETRY OFF and got the
DAP reset. And I'll go ahead - You want us to get
locked up on ATS before we go to that Earth obs vis
attitude for P20? Over.

CC-H Apollo, you'll have to be in that vis obs attitude
to get locked on.

ACDR Okay. We'll set it up.

CC-H Roger. And just one other item; we're going to
delete the waste water dump, and I'll call that
out when we get up on ATS, just in case you got
to it early.

ACDR No, we haven't done that. Thank you, Bo. How's
the weather in Houston this morning? Or have you
been out to see?

CC-H Someone who walked in said a slightly overcast day,
but it looks like it's going to be nice.

ACDR Well, good.

12 22 56 CC-H And we've got a little over a minute until Santiago
at 168:17.

12 39 36 CC-H Apollo, Houston through Santiago and then ATS.

Day 203

12 40 32

ACDR Hello, Bo. Guess we're going to be locked on good on ATS; we got the angle set up.

CC-H All right, sir. When someone has a chance, I have a couple of Flight Plan changes, and the first book we'll need is the Flight Plan.

ACDR We've got that.

CC-H When someone's settled down, give me a call, and I'll be ready.

ACDR Yeah, go ahead. I'm ready.

CC-H Okay. The first one is that waste water dump at 168:29, and we just want to delete that. And we're go - -

ACDR Roger.

CC-H - - we're going to try to get the secondary evaporator activated, but we'll do that just a little bit later when we finish our DSE dump and have comm.

ACDR Okay.

CC-H Next one is on page 4.3-45 at about 171:10 where it says, "VERB 49 maneuver to comm attitude."

ACDR Okay. That's 140 - Say again, Bo. I'm sorry.

CC-H The time was 171:10 and the - it's under your column AC. It says, "VERB 49 maneuver to comm attitude."

ACDR Roger. Go ahead.

CC-H We'd like to change that "260" to "240.5."

ACDR Got it.

CC-H So it now reads, "261, 240.5, and all zeros." And then down below where it says - -

ACDR Okay. Hang on. And this was 240.5, 000, 000?

CC-H ... - -

ACDR I got you, Bo. 240.5, 260, and all balls. Over.

CC-H Negative. It's 261, 240.5, 000.

ACDR Got it.

CC-H Down just below DM height measurements, change the
ATS high-gain yaw 74 to 70 - to 95.

ACDR Roger. Yaw from 74 to 295.

CC-H That's not 295. Change it to 095.

ACDR Okay.

12 42 30 CC-H And that's all I have for the Flight Plan for right
now. The next item would be the Systems Checklist,
and then I'm going to have a couple of updates to
go in the Flight Plan Supplement on the X-ray and
EUV pads.

12 49 28 CC-H Apollo, Houston. Over.

ACDR Go ahead, Bo.

CC-H When someone has a chance, I'd like to give you a
procedure for the secondary evap. I thought you
might not mind me calling because it might make
it a little cooler.

ACDR You better believe we'd like to hear about it.

CC-H Okay. It's Systems Checklist, page 1-18.

ACDR 1-18. Stand by. Okay. We're getting the Systems
Checklist.

12 50 46 CMP Okay, Bo. We just got a MASTER ALARM, and there's
no indicator light on to tell us what - what it
was caused by. And I'm ready to copy on 1-18.

CC-H Okay. We think it's probably an O₂ FLOW HIGH. You
had an accumulator cycle when you were dumping urine.

CMP Right.

CC-H Okay. Did you say you had the checklist, Vance?

CMP That's right. Ready to copy, Bo.

CC-H Okay. S 1 - -

CMP Good morning, by the way.

CC-H Good morning, yeah. (Laughter) That's 1-18.

CMP Okay. Copy.

CC-H Step 14, activate secondary evaporator. We would like you to draw an arrow to show that that last step, which is SECONDARY COOLANT LOOP pump AC1, should be done as the first step in activation of the secondary evaporator.

CMP Yeah. That sure seems reasonable. Okay.

CC-H Okay - -

CMP Okay. And do you want us to try it now?

CC-H - - and the other thing we'd like you to do, first, is on panel 377, GLYCOL to RADIATORS SEC, NORMAL. And then do that little three-step procedure that's on S/1-18, step 14.

CMP Okay. 377 to NORMAL, and then do this - -

CC-H Roger. Then do that three-step modified procedure.

CMP Okay. We'll start doing it.

CC-H Roger.

12 56 25 CMP Okay, EVAP's coming ON now, Bo.

CC-H Okay. We're watching.

12 57 09 CC-H Apollo, Houston. We're watching the secondary evaporator, and it - we'll give you word on it here in just a minute. And I also have an update for the X-ray pad, rev 104.

Day 203

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12 57 25 CMP Okay. Bo, we're kind of all arm - arms full of food and stuff right here. Could we wait and catch that in a few minutes?

 CMP Well, if you need it right away - -

12 57 42 CC-H Negative. We don't need it right away, but we are going to have to have it before the end of this ATS pass because you're going to be starting into that stuff. But we've got like 40 minutes left in the ATS pass.

 CMP Okay. Just a second.

 CMP Okay, are we going to need any other books while we're at it - other than the Updates Book - while we're out scrounging books?

 CC-H Negative. We need the Supplement - the Flight Supplement for this helium glow pad number 104 - for the X-ray pad number 104.

 CMP Okay. We'll get it out then.

 DMP Good morning, Bo. Deke here.

12 59 42 CC-H Good morning, sir.

 DMP Say, could you tell me what your local time is while things are quiet here. Vance is trying to find his book.

 CC-H It's just a couple of minutes after 8 o'clock.

 DMP Okay. Thank you.

 CMP We're back on rather normal hours, aren't we? Okay, let's go. I've got rev 104, X-ray pad.

 CC-H Roger. At the DET of 40 minutes, which is the one before zero. Delete "X-ray cal/background (cue card) (through MAD)."

 CMP Okay. At 40, I deleted "X-ray cal/background (cue card) through MAD)."

 CC-H At 59:30, delete "X-ray."

CMP Delete "X-ray" at 59:30.

CC-H At 2 minutes, substitute for "344," "341.7."

CMP "341.7" at 2 minutes in the roll.

CC-H And the pitch, instead of "291," should be "288.2."

13 01 27 CMP "288.2."

CC-H Roger. At 3:19, add, in the data column, "X-ray ops."

CMP Okay. At 3:19, add "X-ray ops" in the data column with VERB 21 and all that.

CC-H Roger.

CC-H At 5:19, delete the roll of 334 and the pitch of 249 and add, in the data column, "HIGH VOLTAGE POWER, OFF, center."

CMP That's done.

CC-H Okay. And at 9:36, "X-RAY HIGH VOLTAGE POWER to 2."

CMP Go.

CC-H At 14:36, delete 310 in the roll and 259 in the pitch, and add "HIGH VOLTAGE POWER, OFF."

CMP Go.

CC-H At 17:07, delete everything.

CMP Okay.

CC-H At 18:03, delete everything.

CMP Okay. 18:03 - no VERB 21 and all that stuff.

CC-H That's correct. At 21:08, change the time to "21:20."

CC-H And at what was 21:08, add "HIGH VOLTAGE POWER to 2."

CMP Okay. At what now is 21:20, add "HIGH VOLTAGE POWER 2."

CC-H That's right. And there are some changes in the maneuver times. But I - I won't give you those.

CMP Okay. In other words, our counting up to time at the top will get later. Is that right?

CC-H Negative. That reminds 170:34:36, just as it was on the original.

CMP Okay.

13 04 53 CC-H And we'll have a change for a later pad, later. But there is one other item that I should get in now, before I let the people go back to eat. And that is that, on the cue card X-ray ops, you should change "HIGH VOLTAGE POWER 1" to read, "HIGH VOLTAGE POWER 2."

CMP Understand. So the nominal, in other words, is just always HIGH VOLTAGE POWER 2.

CC-H Roger. And there's one thing we'd like you to check. On panel 3 - the DC INDICATOR - would you verify that it's on MAIN BUS A.

DMP Verify it's not. I got it on FUEL CELL 3. I just finished purging it.

CC-H Okay. That probably was a bad call on my part. We were having that question from the evening. Do you know if it was on MAIN A all night?

DMP Well, I can't verify where it was all night. I started fuel-cell purge. I took it from wherever it was down to FUEL CELL 1 and went on through. And I just ended up purging 3.

CC-H Okay. Well, we'll just -

DMP ... a second. I suspect it was probably on BAT C, since that's the last thing I checked.

CMP Just out of curiosity, does that affect your TM, or what?

CC-H Roger. Let me find out from EECOM exactly how.

13 06 36 CC-H Roger. It was a battery voltage that was dropping off, and we thought that perhaps it was on the BATTERY, rather than on MAIN BUS A. But we just wanted to check.

CMP Okay.

CC-H And I'm sorry for all the callups, but we thought we should get those in, so that you'd be able to start off on those X-ray pads with all the newest information. Enjoy your breakfast.

DMP ... While we're on that subject, Bo, do you guys only read what I've got selected, up here? I didn't realize that.

CC-H Negative. We can read others. But I guess when it's selected on one of the batteries over a long period of time, it causes the battery voltage to decrease.

DMP Okay.

13 09 22 CC-H Apollo, Houston. No need to answer. Just a bit of information. That secondary evaporator at this point looks good.

CMP Glad to hear it.

13 09 56 ACDR Bo, as a note of extreme interest, we have five more new fish this morning.

CC-H Roger. Five more new fish.

ACDR Yeah. We're going to be overrun with them here by Thursday. I hope they aren't sharks.

CC-H We've been trying to find the size hook you'd use for those fish, but so far we haven't been able to.

DMP Well, I've been trying to do a little improvisation up here, but I haven't had much success. Those tie-down ropes are just a little bit big for fishing rope.

13 17 30 CC-H Apollo, Houston. I have a little news here if you people would like to hear it while you're having breakfast.

CMP Sounds great, Bo. Roll her.

CC-H Okay. This is news items, San Francisco. Outgoing HEW Secretary Caspar Weinberger attacked the nation's welfare policy Monday and called for wholesale changes to save the nation from bankruptcy and get recipients back to work. In what he billed as his farewell speech as Secretary, Weinberger said current welfare programs are threatening to destroy the nation economically and they are not doing the job for which they were intended. He called for the immediate abolition of food stamps, aid to families with dependent children, and supplementary income allowances and said they should be replaced by a cash grant based on income and a strong work requirement.

Washington D.C.: Attorney General Ed - Edward Levi, deploring it as a terrifying fact of life, Monday reported serious crime for the first 3 months of 1975 was 18 percent above the same period last year. And for some crimes - including robbery, up 28 percent, and burglary, up 20 percent - the increases were larger. Levi also made public the figures for all of 1974, indicating that crime rose 17 percent for that year as a whole. He said the 18-percent rise in crime for the first quarter of this year compared to the 15-percent rise in the first quarter of last year over the preceding year.

Athens: Christina Onassis, one of the world's richest women, will marry Alexander Andreadis, son of a business tycoon. The sudden wedding will take place today in a small chapel, and Jacqueline Kennedy Onassis will attend. Mrs. [sic] Onassis, 24, inherited her father's shipping and business empire. Aristotle Onassis' fortune had been estimated in the hundreds of millions of dollars. Mrs. [sic] Onassis had been expected to - to marry Peter Goulandris of another Greek shipping family who had been her constant companion for months.

Washington: The Senate Finance Committee voted Monday to provide tax benefits for firms which buy equipment to develop new sources of electric power. A 12-percent tax credit would be permitted on investments in equipment used to convert waste to fuel, to convert organic material into methanol or other synthetic fuels, to tap geothermal heat, to mine coal

too deep for ordinary mining equipment, or to buy oil-shale equipment, coal slurry pipelines or coal liquefaction [sic] or gas liquefaction gear.

New York: 56 percent of Americans feel President Ford is doing only a fair-to-poor job; a 9-point drop in his job rating since the Mayaguez incident May 12th, the Harris survey announced Monday. The poll showed 56 percent of those questioned gave Ford a negative rating and 41 percent approved of the way he was handling his job; 3 percent were not sure.

United Nations: The 15 members of the U.N. Security Council met behind closed doors Monday night on the continuation of the U.N. peacekeeping forces in the Sinai Desert. When the Council appealed to President Anwar Sadat, he agreed to a continuation of the force in the desert. The mandate expires Thursday. The appeal was adopted 13-0, with China and Iraq not voting.

East End, Massachusetts: Larry Kopunik is having trouble with peanut butter and sharks. He's determined, however, to celebrate the nation's bicentennial in his own way. Kopunik is paddling on a surfboard from Cape Elizabeth, Maine, to Corpus Christi, Texas. He left on July 4th and paddled to East End. A few days ago, he cut his finger trying to hold on to an offshore target ship and eat a peanut butter sandwich at the same time. "I didn't want to give up my sandwich," he said, "so I sat on my finger, but it didn't work, the bleeding didn't stop; I collected quite a few sharks." Kopunik says his supply of peanut butter sandwiches provided nourishment, but he wonders about his luck while eating them. Earlier during the journey, there was a nervous moment when a huge oil tanker passed within yards of him in heavy fog while he held onto a buoy so that he could eat his sandwich.

And Pine Bluff, Arkansas: An inmate at the State's Womens Reformatory, a prison farm, choked to death Monday on her chewing tobacco. The woman had been undergoing treatment for a nervous condition which caused fainting spells. Officials said that it appeared that she fainted in the prison bathroom and choked on the tobacco while unconscious.

And the last article of our (laughter) news this morning - there's a new development in underwear which may help to dispel domestic discord around the house. A firm has come out with deodorized underwear. The underwear is treated with a secret deodorant formula during the manufacturing processes. The company says it contain - continues to fight odor through 50 machine washings. The firm has a whole line of "no-smell" items for men, including socks, shorts, and T-shirts, but at this point, there is no such line for women.

13 23 51 ACDR How about sending us up a batch of those; we could use them.

 CMP Yeah, we hadn't had a shower for a week, Bo; you hit us right where it hurts.

 CC-H Sorry. We can't get any of that underwear up to you guys right now.

13 24 13 CMP (That's all?)

 CC-H Say again, Apollo.

 CMP (Is that all?)

 CC-H (Everything's okay.)

 CMP Is that it?

 CC-H That's it.

 CMP (That was some good news, please.) or (Thank you, or thank you very much.)

 CC-H (You're welcome.) Sorry, we can't find any better to read up to you.

 CMP That was good.

 DMP Yeah, some of those items make us glad we're up here instead of down there, Bo.

 CMP Sure a lot easier to - to travel those miles this way than on that surfboard, I'll tell you.

CC-H At least no sharks up there. The biggest thing you have are the killifish.

DMP Haven't seen any.

ACDR They're getting bigger all the time.

CMP If we see any outside the window, we'll let you know though.

CC-H And, Apollo, Houston. Now that we've given you a report of what's happening down here, if somebody has a chance, we'd like the morning report from you. Sometime before we go out of ATS coverage; that's about 14 minutes from now.

ACDR Okay. We're still eating here, and we'll be able to give it to you pretty fast once we get it here.

CC-H Okay.

CMP It we do see any sharks up here, it'll mean we're in a very low orbit, Bo.

CC-H Roger.

13 26 13 CC-H And, Apollo, Houston. Just a bit of information. The reason there are so many changes on the X-ray pad is because we're finding that they're getting good data when the X-ray is left off for a couple of minutes, and so that explains most of the turn-offs and turnons in the pad and some of the deletions, to give it a chance to be off for a couple of minutes between data takes.

13 26 41 CMP Yeah, we understand.

END OF TAPE

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

13 31 17 ACDR Okay, Bo, we're ready with the old morning report if you're ready.

 CC-H We're ready to copy.

 ACDR Okay. AC: ... meal A, everything plus a tea; meal B, everything plus cookies; and meal C, everything except peas and add a tea.

 CC-H That was minus peas and plus what?

 ACDR Minus peas and plus teas.

 ACDR Got that?

 CC-H Negative. I still didn't get the addition.

 ACDR Negative on the peas and positive on the tea.

 CC-H Tea! Roger. Go ahead. Got that.

 ACDR Okay. PRD was 11011; 7 good, no medication, and full tank of water.

13 33 05 CC-H Got it.

 ACDR Okay. CP: everything on meal A; everything on B plus turkey, cookies, cheese; and everything on C.

 CC-H Got it.

 ACDR Okay. And the medical log: PRD, 48258; 7 good sleep; no medication; and about 120 seconds of water.

 CC-H Roger. Copy.

 ACDR And DP: meal A, everything plus an orange juice; B, everything plus apricots; C, scratch the peas and add an orange.

 CC-H Roger.

 ACDR And a PRD of 61009; 7 good ones; and 50 or 60 drinks of water.

13 34 24 CC-H Roger. 50 or 60 drinks of water.

ACDR Yeah, that's where the ballpark is.

CC-H Sounds like it's agreeing with you gentlemen.

ACDR Yeah, it really is.

DMP Yeah, everything's going great up here, Bo.

ACDR ...

CC-H Go ahead.

ACDR Incidentally, Bo, one of the reasons we didn't eat the peas is because we couldn't catch up with them. They were pretty wild up here at zero g.

13 35 15 CC-H Understand.

13 36 17 ACDR Bo, before I forget it, just a point on the temperature situation. The DM has been, particularly the hatch 3 end, very cold, continually up until this morning. This morning it's almost warm and, of course, we've got a pretty good collection of water down there. But I don't know how long it'll stay there if it keeps warming up.

CC-H Roger; copy. The hatch 3 end of DM is cold but starting to warm up and up until now, you've had some water down there.

ACDR Rog.

13 38 17 CC-H Apollo, Houston. 2 minutes until LOS. We'll see you at Orroral at 169:24; that's about 8 minutes.

DMP Got you.

13 38 27 ACDR Okay, Bo.

13 45 56 CC-H Apollo, Houston. Good morning. We're AOS through Orroral. Talking to you for about 3 minutes.

CC-H Good morning, Apollo. We're AOS through Orroral for 3 minutes.

CMP Morning, Crip.

CC-H Morning, gents. How you guys doing this morning? Sound great. I've been sitting here listening with Bo for a while, listening to him be - be a newscaster. I think he does a much better job of that than me.

CMP You're all great. No favorites on the news; we enjoy it from all of you.

13 49 24 CC-H Apollo, Houston. We are about 45 seconds from LOS. Our next station contact will be Quito in about 28 minutes, 169:55. See you there.

ACDR Okay, Crip.

CC-H If you guys get a chance, we'd also like you to CLOSE the POTABLE TANK INLET valve, save a little water for us.

CMP Can do.

13 49 51 CC-H Thank you.

14 18 09 CC-H Apollo, Houston. We're AOS at Quito for 3 minutes.

ACDR Earth obs pass right now.

14 18 21 CC-H Copy.

14 24 35 CC-H Apollo, Houston. We're AOS through the ATS. We've got you for - oh, about 12 minutes here.

CMP Okay, Crip.

CMP Just passing over the Orinoco River Delta.

CC-H I'm glad you pronounced that. I looked at it awhile ago, and I wouldn't - didn't want to try.

CMP Oh, I'm not positive. Farouk's the final judge, I guess.

CC-H Rog. When you guys get squared away there, when - don't want to interrupt your pass, but I need to talk to Deke a little bit about this upcoming ETE he's doing on sample 5.

CMP Okay. Stand by 1.

CC-H Okay. No rush.

14 28 06 ACDR Crip, I marked the spot at 10 - 170:06:06 is when the - the muddy water from the Orb - Orinoco Delta suddenly stops; you got the blue water of the Atlantic, it goes out this far. Over.

CC-H Copy that 170:06:06.

ACDR Yeah. You can just give that to Farouk and it's on a trajectory, where the mud comes out this far into the Atlantic.

CC-H That stretches out a pretty good distance across there, then?

ACDR Roger.

DMP Hello, Crip.

CC-H Rog. How are you this morning, Deke?

DMP Just fine, Crip. How are you doing down there?

CC-H Very good. Got a moment for me to bend your ear about the ETE?

DMP Yeah. Go ahead.

14 29 29 CC-H Okay. Tom ran sample 1 for us, and you're getting ready to run sample 5 and when he ended up checking that thing at an hour, he only found two bands in it - which - the only thing we can conclude is that - the first band had already passed on out through it. So what we're going to ask you to do is to - to check it a little bit earlier this time. So if you'd make up - if you got that checklist handy on page 1-8 of - for the ETE, I'd like you to make a note in there to - we want you to check it at 45 minutes after you start it.

DMP Okay, I'll do that, but we were looking at that thing off and on during his run there yesterday and I guess I don't think that a band got out past us.

CC-H Okay. Well, that's - that's a good input. We did not have that knowledge before, but if you go ahead and take a look at 45 minutes and go ahead and use that same rule that we had before, if the front band has advanced to the 100-millimeter mark, we want you to go ahead and go to the freeze procedures immediately; and if it's not, well, you can let it go for another 15 minutes.

14 30 39 DMP Okay. We'll do that. And if we got a little quiet time, I'll just try to keep a progressive watch on it today and make sure.

CC-H Okay. One other item - -

DMP Unless that front band ...

CC-H I'm sorry. Say again.

DMP I was just going to say that unless that front is a very faint one - the one that was obvious to us - certainly didn't get past us.

14 31 01 CC-H Okay. It - to the best of my knowledge, it is pretty faint, but we're - we'll get a reading on it for you. Incidentally, there was some discussion about - also, yesterday, you guys had misplaced that little kitchen timer we had and, consequently, you were having little problems trying to get back to it. Would you - if that's so, would you like to go ahead and note the time that you start the thing, and then you could give it to us, and we can give a reminder when we're at the time?

DMP Well, we found it again. Late - late in the afternoon. So, unless I lose it again today - We've got it stashed down there right now, and we'll try to tape it down or something to keep it with us.

14 31 45 CC-H Okay. Copy that. Then - I believe you can go ahead and proceed normally then without getting a reminder from us. Did I copy that correctly?

DMP Yeah. But I don't mind giving you a time hack on it anyway, just as a backup. I'm not sure that timer's the greatest thing in the world either.

CC-H Okay. We'd kind of appreciate it if you could go ahead and note the start time then, and we'll try to - try to help you out on noting when you might - should take a look at it again. Also, we'd like a - -

DMP Okay, sure.

CC-H One - one other item was that apparently you guys gave us a readout on voltage yesterday and - where that was higher than we has anticipated. We would appreciate it if we could make that sort of a nominal step now. The - give us an inch and we're going to take everything we can get. We'd like to go ahead and get a readout on - on voltage nominally in - after step 4 in your checklist, if you could.

DMP Okay.

CC-H The reason for that, I guess, is that if it's running high like that, we're considering reducing the amount of - amount of time that we're using for the samples.

14 32 46 DMP Okay; fine.

ACDR And, Crip, we're deactivating the secondary evap at this time.

CC-H Okay, fine. And, Tom, what we're going to have to - we're going to have to leave that up to your discretion regarding the secondary evap. It looks like it's working good. We would just as soon leave it off as much as we can, but if you guys are getting warm, well, you can activate it where we've called out for activating the primary in the - in the checklist. I noticed you got one period here coming up around lunchtime, where we'd have a good period there; you could turn it on if you wanted it.

ACDR Okay. Why don't we plan that around lunchtime then? Every little bit helps.

14 33 22 CC-H Rog. It looks - just looking at the data down here, it looks like it's bringing it down pretty good right now. And for Deke, one other item I had, whenever he gets a chance, since we have got the secondary evap working and we know that that duct is clear, we can go ahead and go back to the nominal configuration on

the LOW PRESSURE RELIEF valve in the docking module; that is, go ahead and take the thing to CLOSE and the PRESSURE RELIEF VALVE REFERENCE to DOCKING MODULE. Since the duct is clear, the command module relief valve will work satisfactory. No problem.

14 33 56 ACDR Okay, we'll take care of it.

CC-H Apollo, Houston. To get some loads out of the road before you start on your operations for this upcoming X-ray pass, we would like to go ahead and get ACCEPT, and then we'll give you a state vector and, also, we'll update a time for an EMP that we loaded last night.

14 34 59 CMP Okay. You've got it.

CC-H Vance - I mentioned that EMP. I'm not sure we got word to you last night, but we did load that raster scan EMP again because, for one of the passes that we had - we're going to substitute for X-ray - we're going to do a - instead of an EUV raster scan, we're going to do a helium glow. And I was trying to look at - ahead in the future, to see when I'm going to have to do some pad updates for you. And over on your next page there at around 127 - correction, 171:40, I believe you've got some time. And what we're going to try to do is - we got two pads rev 105 and the following, 106 - we're going to modify slightly. And I guess we're going to have to call on you guys to help us out, there - about how many changes you can accept. We're trying to recover some data, of course, from the problem we've had with the X-ray. And - we've tried to put it together in sort of a - a manner that didn't perturbate you guys too much. And we'll just try to - try to live with it, whatever you guys can accept.

14 36 17 CMP Okay, well - yeah, I'm - it's a good time for me to copy some pads.

CC-H Did I understand now - or then - was a good time?

CMP Right now would be good, as soon as I stop this maneuver. Okay?

CC-H Okay. Fine.

CMP And you've got P00 now.

CC-H Okay. We see P00. And we're just coming up over Madrid. As soon as we get AOS through there, we're going to go ahead and start doing this uplink we talked about.

CMP Roger. Understand. And I'll be starting a maneuver here too.

CC-H Well, we'll have to hold up then, because that'll - conflict with yours.

CMP Okay. How would it be if I go on the maneuver as long as possible and when you get ready to uplink, why - we'll kill the maneuver.

CC-H We're - if you'll hold up on the maneuver there, for us, Vance - we think that we can accept it starting a little bit late. We'll try to get this uplink in as fast as we can.

CMP Okeydoke.

14 37 51 CMP The computer's yours.

CC-H Okay, we - see you stopped it. We'll start.

14 38 22 CC-H Vance, while we're waiting on this load - we might be able to get a little of this pad stuff out of the road. What I would recommend is, if you have - Look over on the 9 Alfa portion of your Flight Plan Supplement. There's a helium glow pad - rev 120.

CMP Okay. Stand by.

CC-H Okay. I'm not sure we're going to have all this time available to get it, but at least you'll know where it - we want to go next time.

14 39 18 CMP Crip, do you mean the normal supplement or the contingency?

CC-H No, I meant the normal - normal supplement. There's a 9 Alfa page in there - a set of 9 Alfa.

CC-h If - if you just look on your tabs, there, Vance - following the astronomy, there should be a tab for 9 Alfa pads.

CMP Okay. Right.

CC-H Tell you what - -

CMP Okay. And - okay. You'll have to repeat the page number.

CC-H Okay. It was - it's actually the first one there, that helium glow pad, rev 10 - correction, rev 120.

14 40 09 CMP Okay. So it's the first page and - -

CC-H Yes, sir.

CMP 5-3, there. Ready to copy.

CC-H Okay. What - I'm going to go ahead and give you one in advance on this; we're going to get both of them on this same page. I'm going to take advantage of the blank portion down here. Okay. Before I press on, we've completed our uplink, and you can go ahead and press on with your maneuver; I'll let you get that started, and then we'll start on this pad. And what's happened is - I'm going to go LOS while you're maneuvering. And we'll get as much as we can.

14 40 40 CMP Okay. And the maneuver is going, and I'm ready to copy.

CC-H Okay. Instead of rev 120, mark that out, and it's going to be rev 106. Okay? The time for counting your DET up to - -

CMP Stand by 1.

CC-H Okay.

CMP Okay. You were blocked out. I - I understand rev 20 is now rev 106.

CC-H That's affirm. And the time - -

CMP Okay. And proceed on from there.

CC-H Okay. The time that we're going to count the DET up to is 173:42:42. Correction; make that 173:42:50.

CMP Okay. Just keep going, and - -

CC-H Okay.

CMP - - I'll tell you if you're going too fast.

14 41 36 CC-H Okay. Change your 52 DET time to 53. At 55, beside EUV, make a note to use detector 1. Prior to the VERB 24 NOUN 79 entry, I want you to make a - an entry for the EMP. And, incidentally, this will kill your high-gain EMP. It's VERB 25 NOUN 26 ENTER, 01 ENTER, 16 22 ENTER, 74007 ENTER.

14 42 29 CMP Okay.

MCC-H You change it to 50.

CC-H Okay. On that - on your NOUN 79, on the last ..., we want to change that to plus 0050 vice 00 - I say again. We want to change it to plus 00050 vice plus 00010.

CC-H If we go over the hill here, your next station contact will be in 37 minutes at Orroral. Your're - also, right after your changing your NOUN 79, we need to go ahead and have the D - make a note for DSE HIGH BIT RATE, RECORD, FORWARD, COMMAND RESET. Okay. Down at the bottom, following your powerdowns, I want to go ahead and change the NOUN 26's back for the high-gain EMP, and I'll give you those now. It's VERB 25 NOUN 26 ENTER, 10001 ENTER, 01412 ENTER, 66105 ENTER. Okay. Now what I need is a note that you can put wherever's convenient. And it's to read: "At DETs of 00:00 and 08:30, turn X-RAY HIGH VOLTAGE POWER to 2 for 2-1/2 to 3 minutes." Accuracy on that's not - not important. And then, "HIGH VOLTAGE POWER, OFF." What we're trying to do, as Bo mentioned to you earlier - if we turn the high voltage power off, and then just leave it on for, like, a couple of minutes - we seem to be getting good data. And that's what we want to do is to pick up that data at 00 and 08:30. You get most of that?

CMP Yeah. Let me try to read it back. Okay. Rev 106. Time 173:42:50. First change. Change 52 minutes to 53 minutes. At 55, over EUV, put detector 1. And just ahead of doing NOUN 79, do VERB 25 NOUN 26 ENTER, 01 ENTER, 16 22 ENTER, 74007 ENTER. Change plus 00010

to plus 00050. And after the VERB 24 NOUN 79, go
DSE HIGH BIT RATE, RECORD, FORWARD, COMMAND RESET.
Still with me?

CC-H That's affirm. Good readback so far.

CMP Okay. Then down at the bottom - and that's after
the powerdown at the 14:38. Do VERB 25 NOUN 26 ENTER,
1000 ENTER - I'm sorry - 10001 ENTER, 01412 ENTER,
66105 ENTER. Then a note: "At the DET 0 and 08:30,
turn X-RAY POW - HIGH VOLTAGE POWER to 2 for 2-1/2
to 3 minutes and then OFF."

CC-H Okay. That's a good readback.

CMP Okay.

14 46 40 CC-H Okay. The other item - well, you're getting close
on this other pad. What I wanted you to do is - in
the blanks that you've got below, on this thing - we're
going to - I'm going to read you a new pad for rev 105.
And we can just fill that in. How do you feel about
continuing that or do you want to pick that up a little
bit later? Don't want to rush you.

CMP No, if we've got comm, go ahead. And that's on this
same page?

CC-H That's affirm. Why don't you just draw a line and
put this one for rev 105.

14 47 17 CC-H Okay. And we'll want to start the DET counting up to
172:03:34.

CC-H Okay. And we'll start a DET of 55:00. Under data
column, make - -

CMP Oh - -

CC-H Go ahead.

CMP Okay, Crip, sorry. I'll have to ask you to start
from the beginning - 172 and on.

CC-H Okay. No sweat. Count the DET up to 172:03:34.
At a DET time of 55:00, under data column make a
note for helium glow and EUV ops.

CC-H At a DET of 4:00, note under angles for attitude,
we want 256.60; pitch is 240.50; yaw is 000. Also,
at 4 under data column, we'll want to make X-ray ops.

CC-H Okay. At a - -

CMP Oh - -

CC-H Go ahead.

14 49 03 CMP Okay, I got - let me read what I've got now; I've
got a little question.

CC-H Okay.

CMP 172:03:34. Starting at 55:00, turn - do a helium
glow and EUV ops. Then at 40:00, did you say?

CC-H That's correct.

CC-H Whoa, whoa; I'm sorry. That's at 4 minutes on the
DET. You can make it 04:00.

CMP Okay. 04:00. And then what was the 256? The roll,
pitch, and yaw were 0.60, 240.50, and 000. But what
did 256 represent?

CC-H Okay. The roll is 256.60.

CMP Okay. Got you:

CMP Okay, so at 04:00, got roll of 256.60, pitch of 240.50,
and yaw of 000, and do X-ray ops.

CC-H Okay. That's fine. I've got a couple more line
entries on that, but we're about to go LOS on the ATS,
so why don't we just hold them up until you finish
up with this pass you're on. And we'll see you at
Orrorel in about 30 minutes.

CMP Okay. Very good, Crip.

CC-H Okay, Vance; thanks a lot. I appreciate taking -
you taking the time to do all that good writing and
so do the experiment folks.

14 50 46 CMP Okeydoke.

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TAG Tape 203-06/T-90
Time: 203:15:00 to 203:16:30
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

15 18 56 CC-H Apollo, Houston. We're AOS VHF only through Orroral, currently. I got you for a couple of minutes.

15 20 51 CC-H Apollo, Houston. About 30 seconds left here at Orroral. Next station contact at Quito at 171:26 - 171:28. That's about 30 minutes from now.

15 50 18 ACDR Hello, Houston, Apollo. How do you read?

CC-H Loud and clear. How me, Tom?

ACDR Roger. Through Quito now, I guess.

CC-H That's affirm. We're at Quito. We've got you for about 4 minutes. And I - I said loud; actually, I'm reading you clear and kind of faint.

ACDR Okay. Would you pass on to Ed Fendell's troops on this last pass, due to the problems we had on the - you know, getting things started up, as far as the DET time, we finally had the X-ray data from a DET time for 5 minutes - was 24:00 to 29:00. Over.

CC-H Okay. Let me get that again. It was 24:00 to 29:00?

ACDR Yeah. That was when - that was supposed to be from 21:20 to 26:20. We ended up getting from 24:00 to 29:00, and the people made a mistake when they omitted that I - rate in the DAP. We couldn't get to that attitude in the period of time. Right above it was a high DAP rate and these - that was scrubbed out in the - in the revised pass.

CC-H Oh. Okay. That's one of the dangers we put ourselves in and when we start redoing the pads. Well, at least we got something.

15 51 28 ACDR Okay.

CMP Crip, did - did - Tom, did you explain the - this part here? Okay.

ACDR And, Crip. Do you - I guess - do you have a new pad for X-ray rev 105.

CC-H That's affirm. I had started on it awhile ago with - with Vance, and I need to - to go ahead and continue that. We - we can get it now, or we probably got a little time that - after we lock on the ATS, too. We got a couple more minutes left in this pass.

CMP Okay. I'm ready to copy. As I recall, your last words were 4 minutes, and you gave me a roll, pitch, and yaw and X-ray ops.

15 52 23 CC-H Okay. That's - that is correct, and our next entry under the DET line is at 10:15. For roll, pitch, and yaw, we have 258.60. Pitch is 205.70. Yaw is no change; that is still 0000. For a DET time of 19:10, roll is 255.60. No change on pitch and yaw. At a DET of 25:00, under "Data column," want to put "EUV helium glow and X-ray power down" and then go back to Flight Plan. I need also to note - that when you get to each attitude, turn the X-RAY HIGH VOLTAGE POWER to 2 for 2-1/2 to 3 minutes and then HIGH VOLTAGE POWER, OFF. Did you copy that?

CMP Okay. Readback. After 4 minutes, at 10:15, roll, 258.60; pitch, 205.70. At 19:10, 255.60 for roll. At 25:00 a EUV helium glow and X-ray powerdown. Go to Flight Plan. Note that each - at each attitude have the HIGH VOLTAGE POWER ON for 2 minutes and then OFF.

15 54 33 CC-H See you at MILA in 1 minute.

15 57 45 CC-H Apollo, Houston. We're talking at you through Bermuda now.

ACDR Okay, Crip.

CC-H And that was a good readback, Vance.

CMP Okay.

DMP Hey, Crip. A couple of quickies here. We started the ETE about 10 minutes ago, I guess, I got the timer running. We're late on that for two reasons. Number 1, we lost that darned reflector three times so far today and we're in the process of rebuilding one and finally discovered it again. And, secondly,

we got so much humidity in here that every time we open that thing up, everything gathers frost instantaneously. And sample 5 was frozen in. We finally broke it loose. That's just status. We've got a small problem. I'm supposed to be doing the fish thing; I think I called you yesterday on the 16-millimeter mag to use for that. We've got mag 129 that Tom used the first day, and I was about to use the rest of that. However, we've discovered that we're almost fresh out of DAC magazines, and we're debating whether to hold this for entry or use it up on the fish. I guess we need a recommendation from you guys.

CC-H Okay. Understand. Mag 29 is the one we'd planned on using. Understand. You're almost finished with it?

15 59 12 DMP No. There's 80 percent left, but I used up all of mag 28 on the first two fish tanks for some reason. We ended with a red light at the end of it yesterday.

CC-H Okay.

DMP It - it shouldn't have happened, incidentally; we should have had enough film there to do that, but - and I was timing it, I think, reasonably well.

CC-H Okay. Our recommendation, Deke, is still to go ahead and proceed using mag 29 for it.

DMP Okay. Well, we may not have any film left for entry photography, and that was our concern.

CC-H I believe we think - I think we've still got that covered, and I'll verify that for you, Deke. Incidentally, did you manage to get a voltage reading off of that ETE for us?

DMP BAT C?

CC-H Rog.

DMP We got 37.

CC-H I'm sorry, Deke, I couldn't copy that. Would you say it again?

DMP 37.

CC-H 37 volts. Thank you.

DMP Roger.

16 00 19 CC-H I'm going to keep quiet here while we hand over to the ATS.

16 01 04 CMP Houston, Apollo.

CC-H We're back with you, Vance.

CC-H CP, Houston. Go ahead, Vance.

CMP Roger, Crip. I'm looking at this rev 105 special pad I copied a little while ago. And I guess the initial attitude is the one called out for 4 minutes. Is it okay to go to that at this time or will you lose comm?

CC-H Okay. That attitude you went to, I guess, we show you there right now. The comm attitude that you're currently in is going to be the first data take. We - that's the one - we just sent you too early.

CC-H You understand that then - that we modified that attitude earlier. I guess Bo did it for you, and it just put you in the correct attitude now for that first 4 minutes of data take.

CMP Okay, that's - that's good then. We'll stay here until 4 minutes.

16 02 22 CC-H That's affirm. Wonder if I could get a clarification from Deke on that voltage awhile ago. We copied 37, and it should be something on the order of 200 and something. Was that 237?

DMP Crip, I'm sorry. I thought you said BAT C. You were talking - (Laughter)

CC-H I'm sorry I wanted the - -

DMP You said ETE, huh?

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CC-H That's affirm. I thought that sounded awful much like a battery voltage.

DMP That's exactly what it was. I thought you said BAT C. Okay, stand by; I'll get her for you.

DMP Okay, Crip. The voltage is reading 193 right now.

16 03 27 CC-H Copy. 193.

DMP Rog.

DMP Hey, we're talking experiments; we might as well flush another one into the system. We've been looking at the crystal growth every day per schedule. I haven't seen much of anything happening in there. Went down to get a close look this morning. And there's bubbles in three or four compartments, but I certainly don't see any evidence of any crystals. I don't know if there's anything we should be or can do about that subject.

CC-H Okay. Can you give us a little description of the bubbles? Are they - Quantity and size and so forth.

DMP Well, okay. Stand by, and I'll try to give you a - -

CC-H Well, I - -

DMP - - quantitative analysis.

CC-H Okay. It's not necessary for you to go digging it out now, but sometime if you could just give us a little bit detailed description. I'm sure the PIs would like to have it.

DMP Okay. I tell you, why don't you give me a little time because I ought to get the floodlight back on to do that right.

16 04 28 CC-H Sure. No problem at all. Just the next time you have an opportunity to take a look at it. And, incidentally, your Flight Plan shows you that we're going to lose comm on the ATS here (cough). Because we're doing a new attitude, we should have comm with you all through this ATS pass.

DMP Okay.

16 05 13 CC-H And a couple items for both Vance and Deke. I'm standing by with times for crossing the Adriatic, that sea farming area we talked about a little bit yesterday. And, also, for Deke, I got a - I'm going to have a time for the crossing of Wisconsin. It'll probably be easier for me just to call those a little bit ahead of time - give you 10 or 15 minutes warning about it.

CMP Okay, I'm ready to copy.

CC-H Okay. We should be crossing the Adriatic at about 173:26. Not sure of the attitude; it's going to be much - I mean - the viewing is going to be much better than it was yesterday, though. For Deke, the - should be going across Wisconsin at about 174:40, somewhere on that order - 41.

16 06 35 CMP Okay. Got those. Thank you.

CC-H You're welcome. Incidentally, talking about that DAC film for entry, we've currently got CX05, which should be in F-2, scheduled for - scheduled for entry. We're assuming that's still available.

CMP Okay, we'll have to get back with you on that, Crip. Right now, Tom's taking an inventory of the DAC film.

CC-H Okay, fine.

16 07 56 CC-H CP, from Houston. Vance, have you got - got an opportunity now to make a couple of small mods on your Flight Plan regarding ATS and - attitudes - a couple things - or would you like to get them later? No big rush on them either.

CMP Okay, yeah - go right ahead.

CC-H Okay, why don't you flip over to 173:10. We had not anticipated having ATS there, but because of our attitude change, we are going to have it. And I'd just like you to make a note down there to acquire ATS and with a pitch of minus 35 and yaw 114. And - just do it like you normally do.

CMP Got it. Okay.

CC-H Okay. And, also, that - or course, that note down there about losing it, losing the ATS, is not applicable - or not being available, rather. The other item was over 174:13. To get us to this new vis obs attitude that we've been working at, we need to change R2 on your NOUN 78's to plus 06000, instead of 9000.

CMP Yeah. Roger.

16 09 13 CC-H Also, we'll be able to keep ATS down there at 174:45. We don't - don't need to say that's ..., and we need to change those angles at 174:50 to a pitch of minus 10, which it is, and a yaw to minus 25. I'm sorry, I'm sorry. Let's start over again. Change the pitch to minus 25, yaw remains the same.

CMP Okay, so in summary, pitch is minus 25 and yaw is 335 - 355.

CC-H That's good. That's - that's all I've got for now; another little item I'm going to be coming to you a little bit later is that we got word that the red tide has been spotted off the East Coast there, and I'm going to give you a time and camera and so forth a little bit later to be picking that up.

CMP Okay. Good.

CC-H Apollo, Houston. We notice that we're - we're still sitting in ACCEPT, and you can go back to BLOCK whenever you like.

16 10 57 CMP Roger. BLOCK.

16 13 35 CC-H Apollo, Houston. If somebody could get down around 230 for us, from the data we saw last time, it looks like the cal source for the X-ray is hung up in front of the instrument, and we need you to take the X-RAY PURGE switch to the CAL position and hold it for about 10 seconds and then release it.

CMP Okay. Stand by.

16 16 49 CMP Okay. We went to PURGE for 10 seconds and ...

CC-H Okay. Appreciate it.

CMP I mean, to CAL.

CC-H To CAL, yeah.

CMP CAL for 10 seconds, yeah.

CC-H And, I was just telling Ron down here that nomenclature does it to me, too.

CMP Right. The purge switch that you make a cal with.

CC-H Roger that.

CC-H Would this be an opportune time, while we're waiting to get these things started, to tell you a little bit about the red tide site that we've got coming up?

16 17 30 CMP I'd rather - I think Deke's probably got that. I'd rather kind of have him here on the headset.

CC-H Okay.

CMP He's pretty busy right now.

CC-H Okay. We'll hold up on it. Well, you might tell him that I'm standing by to talk to him about it whenever it's convenient for him.

CMP Okay.

16 18 45 CMP Houston, Apollo.

CC-H Go ahead.

CMP Just studying the pad 105 here and at 4 minutes, of course, we have the maneuver and X-ray comes on right at the same time. You want X-RAY ON during the sweep of that maneuver?

CC-H That's affirmative. We've looked at - looked at these and don't see any problem with them.

CMP Okay.

CC-H Actually the maneuver's a very - very short one, Vance, and by the time you get down there and get the door open and everything, you're going to almost be in the attitude.

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16 19 20 CMP Okay.

END OF TAPE

Day 203

TAG Tape 203-07/T-91
Time: 203:16:30 to 203:18:00
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

16 30 50 CC-H Apollo, Houston. We're still having problems with that X-RAY CAL source. If somebody could take the opportunity to go down to 230 and hit it to CAL once more and don't - don't hold it for 10 seconds this time, but just hit it and release it like we normally do.

CMP Hit and release.

ACDR Okay. Coming down to CAL -

16 31 10 ACDR MARK.

16 31 12 ACDR Released.

CC-H Incidentally, Tom - I tell you that that was a good head on that - picking up that target awhile ago on that previous pad. That worked out real well. We got the whole thing in. And we were getting good X-ray data on that at that time. So, that helped out.

ACDR Okay. Real great.

16 32 34 CC-H Apollo, Houston. Tom, that one didn't work. I guess about the only other thing we can think of is that - Why don't you try several successive positionings of the switch to CAL, and let's see if that'll get it moved out.

CMP Okay. Understand.

16 33 17 CMP Okay, he - Tom hit it about five times to CAL.

CC-H Okay. Would appear that it - Oh, stand by 1.

16 34 18 CC-H Apollo, Houston. That CAL thing is still stuck out in our road. However, that's not preventing us from getting data on the X-ray, and that's - that's still working out. So, appreciate your efforts. Thank you.

CMP Okay. And we turned the HIGH VOLTAGE POWER, OFF.

16 34 29 CC-H Rog. We're sitting down here looking at the data at this time. See it off.

CMP Leave it on? Okay.

ACDR Okay. HIGH VOLTAGE POWER 2 coming back on.

16 34 50 ACDR MARK it.

CC-H Vance, if you're working the DSKY there, we're - I see we're getting close to your next maneuver and do not see it loaded.

DMP Crip, Deke here.

CC-H Rog, Deke.

DMP Hey, I just checked electrophoresis - at 45 minutes, and at the 73-millimeter mark, there was a bright stripe I could see. However, I wouldn't term it a stripe. It looks to me like it's a sphere, either coming - or about 40 millimeters. It doesn't seem to be banding today like it was yesterday.

CC-H I'm sorry, Deke. You're way, way down. I can barely copy you. Would you say again where the banding is, please?

DMP Okay, let me try it again. How's that?

CC-H That's much better.

16 35 50 DMP Okay. Yeah, I said it's 45 minutes - the first of the - I wouldn't call it a band. I guess it's - what I'd call the front of the color area - is at about 73 millimeters. And that is a colored area that covers about 40 millimeters. But I don't - I wouldn't call it bands at all. I'd just call it an area of coloration within the tube.

CC-H Okay. Copy that. It's not forming little bands. You had seen the bands before - before flight - how it was supposed to divide up, had you not?

DMP Yeah. Well, we saw them sample 1's - -

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Page 3

CC-H Rog. And I understand this sample 5 is not banded in that manner. Let me see what I can get you for a future plan of action.

16 36 38 DMP Okay.

CC-H Incidentally, Deke, on - on our upcoming pass across the States, we are going to have an opportunity to look at the red tide. And I was going to get you some information about that whenever it's convenient for you to copy it.

16 36 56 DMP Okay. Stand by for it.

16 37 14 CC-H What might be convenient for you, Deke, is if you can just get out your - your Earth OBS book on target 5 Foxtrot, and I can just relate it to you on there.

DMP Okay. Fine. Just a second.

DMP Okay. Go ahead.

CC-H Okay. To describe to you where the ship spotted it if you're looking at 5 Foxtrot, right above where we've got the words "Booth Bay" written in, you can see there's a river that looks like it's flowing - flowing south there that comes out. Well, it was right at the mouth of that river that the red tide was spotted.

16 38 06 DMP Okay. Got you.

CC-H Okay. And our recommendation on - on the camera is - Well, for the window, it should be visible out of CM-3. Want you to use the silver camera, of course. And use 50, with an f-stop of 9-1/2 and a speed of 1/500.

DMP Okay. Got that.

CC-H Frame intervals should be about 6 seconds - every 6. And we should be passing over that, if you want to note it, at about 173:09 to 13. And we'll - can give you a call just before that if you'd like a reminder.

DMP Okay. 173:09. And you want to shoot a mapping strip through there, essentially, huh?

CC-H Negative. You can go ahead and just use it and take a shot about every 6 seconds or as you see fit.

DMP Okay.

16 39 37 CMP Okay, Crip. And we have HIGH VOLTAGE ON, and we'll leave it on until you say turn it off.

CC-H Okay.

16 40 12 CC-H Vance, did I copy that you had the HIGH VOLTAGE on now?

CMP That's affirm. We turned it off during the maneuvers.

CC-H Roger.

CMP Trying to comply with your note, somewhat.

CC-H Yeah. Okay. The accuracy on that is not - all we need is the approximate time on a couple of minutes - couple to 3 minutes.

DMP And for the fish expert, if you want any information, I can give it to you.

CC-H Why don't you go ahead and shoot it to us.

DMP Okay. Number 1, in package 5, now has ten hatchings in it. And you're missing one out of package 4 this morning. One fatality, like I said due to ...

CC-H Let me make sure I got that. In package 4, that - we have lost one or you had one. Is that correct?

DMP There had been five live ones. Today there are only four.

CC-H Okay.

DMP Other than that, everything's normal.

CMP Yeah.

CC-H Okay, for Vance. We're not seeing anything on that high voltage right now, we're assuming that you're in 2. If that's so, why don't you go to HIGH VOLTAGE 1.

16 42 10 CMP Okay. Go from HIGH VOLTAGE 2 to 1.

CMP Okay. We had a miscoordination here. It was - it had just been turned off and now it's back to 2.

CC-H Okay. Fine. Yeah. That's better.

CC-H For the DP. Deke, on the ETE, I guess what we want you to do is to go ahead and shut it down at 60 minutes.

DMP Okay. You want an early shutdown.

CC-H Rog. Go ahead and do your normal freeze there.

DMP Okay.

16 43 57 ACDR Crip, I've got a question.

CC-H Yes, sir. Go ahead.

ACDR Okay. When you have a few little last, footage - we're trying to scrounge off of each mag on the 16's now. We've got the - the 70 pretty well squared away. But - to shoot out the window at subjects on Earth, view out of the window, you know, on these Earth obs passes, what's the setting going to be? I think we use a 75-millimeter lens, right angle brackets, but get me a ballpark setting for color exterior film. Over.

CC-H You want a - give me that once more, Tom. You weren't coming in very clear. For a 75-millimeter lens, on that color exterior, you want the settings?

ACDR Yeah. For the DAC.

CC-H For the DAC. Roger.

ACDR Hello, Houston, Apollo.

CC-H Go ahead, Tom.

ACDR Okay. I assume for Earth obs, that if you want us to use a 75 millimeter with the right angle, versus the 25 - get me a reading on that, please, too.

CC-H Okay.

Day 203

16 50 17 CC-H Apollo, Houston. We're about 2 minutes from LOS. Our next station contact is going to be MILA in about 36 minutes. On your powerdown for X-ray, we do not want you to to the CAL position. The thing came loose by itself and we do not want to do that first step on the normal powerdown. For Tom, we would like you to use table B on your exterior photo cue card for the settings on the - with the DAC. Those are applicable with the DAC as well, and you can use whichever lens you'd feel most comfortable with. It doesn't make any difference.

16 50 52 ACDR It doesn't matter to us, whichever gives the most ... to the people there. It's either 75 or 25.

17 26 22 CC-H Apollo, Houston. We're AOS through MILA. We have you for about 6 minutes.

ACDR Roger. Are we near Houston, right now? Over.

CC-H Well, you just crossed over into the Gulf of Mexico - coming across the coast of Mexico. Houston and the Texas coast should be coming up - up pretty shortly.

ACDR Roger.

CC-H Couple of items on - on this pass coming across here. I'd earlier - given Vance an update, telling him we were going to use high-gain-antenna angles and so forth, and we've changed our mind on that. Don't guess - You do not need to acquire the ATS. It's not going to be available; we - we've released it.

ACDR Okay.

DMP Hey, Crip. Give me a reconfirmation on the window for the New England area. Looks to me like it's going to end up being window 5. We don't see anything out of - anywhere else to speak of.

CC-H Okay. The one we'd been given earlier was - was out of 3, and we'll reverify that for you, Deke.

DMP Okay. Maybe by the time we get up there, that'll be right. It's not right from here, anyway.

17 27 30 CC-H Roger.

DMP Okay. We'll stand by and see what happens.

CC-H Okay. Also, if somebody can flip back for us and - on the previous page there, we can pick up that last P52 results. We'd appreciate it.

ACDR Ready to copy?

CC-H That's affirm..

ACDR Star 30, star 17; NOUN 05, all zeros; plus 11.4, minus 85, minus 34; torqued at 178:08:00.

CC-H Okay. Very good. Thank you.

CC-H Apollo, Houston. Like to say a few words about this rev 106 pass, on this helium about coming up to you, if you got a moment to talk about it.

CMP Go ahead.

17 28 44 CC-H Okay, Vance. Maybe you're familiar with it. This was - this is going to be a helium glow raster scan, which was something that we desired to get in, but didn't make the priorities normally. And since the X-ray's not working all that spiffy for us, we're going to go ahead and do it. And basically, it's going to work just like your E - EUV raster scan, except we put a different time constant in it, so it's going to be scanning a larger area.

CMP Okay. Understand. That's what we'll have for pad 106.

CC-H That's affirm. And that's - of course, that replaces the nominal 106 pad.

CMP Right.

CMP Houston, Apollo.

CC-H Go ahead, Vance.

17 29 55 CMP I just take it that - we want to use - make the raster with - P4 - VERB 49 maneuver rather than P20. Is that because we get a longer raster or what?

CC-H Yeah. What happens, Vance, is that you'll have VERB 49 maneuver to get to the initial attitude. Okay? And, then when you go in and follow the pads down - down through what we've given you in there, it'll go ahead and be initiated on the - I think it's initiated on that VERB 31 ENTER.

CMP Oh, Roger. Roger.

CC-H Yeah. You've got to - you've got to do all the other stuff, but when it really starts rastering is when you get to the 31 ENTER.

CMP Okay. Oh, okay. I was thinking of another kind of scan.

CC-H Yeah. And, you'll notice a little bit later down there, at 7:08, you'll do another VERB 49, which will put you at a different attitude, and then you'll reinitiate the - the raster.

CMP Okay.

CC-H Regarding Deke's question on the red tide, we anticipate that's going to come visible first in window 5, come across window 3, and then through 1. And we thought 1 would be - a correction - we thought 3 would be the best total viewing.

DMP Okay. Thank you, Crip.

DMP Okay. We're over Cape Cod right now. I think we got her.

CC-H Very good. Outstanding.

17 34 07 DMP We're having trouble telling sunglint from red tide, however, in this area.

CC-H Yeah. Appreciate the problem.

CC-H I'm going to drop you through a keyhole. I'll give you a call when I'm back with you.

DMP Okay, Crip. We got some pictures up through that area and we see some water that - that's obviously sedimented up pretty good. And we're trying to differentiate if it's really red tide or red sediment. It's difficult for me to evaluate, frankly.

CC-H Okay. Very good. If you got the photos, we should be able to make a determination once we get them back. Thank you.

~~DMP~~ Rog. And the other complicating factor is we got sunglint in here, which kind of drowns them out.

CC-H Copy that.

17 37 56 CC-H Apollo, Houston. Talking at you through Newfoundland now. And we do not show a VHF downlink, might check to make sure that we've got that VHF AM on.

CC-H Apollo, Houston. How do you read on VHF through Newfoundland?

17 39 21 CC-H Be advised if you're reading me, I'm not reading you. And we're going to have you at Madrid on that STDN about 4-1/2 minutes. Talk to you there.

17 44 09 CC-H Apollo, Houston. We're AOS through Madrid now. How - We got you for 4 minutes. How do you read?

CMP Loud and clear, Crip.

17 44 17 CC-H Hey, Vance. We had some funnies on our downlink coming across the States, and it looks like maybe the comm panels might be misconfigured. Can we verify it, please, that everybody on 6, 9, and 10 got S-BAND in T/R and VHF AM in T/R.

17 44 37 CMP Okay. Verify all three panels S-BAND and VHF and T/R. Stand by.

17 45 13 CMP Okay, Crip. Panel 10 was fine. Panel 6 and 9 did not have VHF AM on T/R.

CC-H Okay, fine. Appreciate you getting it on. I - I'd lost you there through Newfoundland I could - I couldn't hear anybody talking to me. And I get lonesome down here.

CMP Yeah.

CC-H We're going to get ready to come across the Adriatic like we talked about. You're maneuvering though, so we're not really sure whether it's going - going to be possible for you to see anything or not.

CMP Okay. And what's the time of that again?

CC-H Oh, about 26 - -

CMP I've got it. Yeah. 46. 26.

DMP Say, Crip, one reason we've been knocking that VHF off is to get rid of all this power noise.

CC-H Yeah. I - I suspected that might have been the case. Well if it - if it gets to be too much of a pain, well, we've got you on S-band every place else except Newfoundland.

DMP Okay.

CMP And, Crip, I'm on the - in the low maneuver rate. Is that proper for this particular maneuver?

CC-H That is affirmative, and looks like we have you change your DAP here at DET of 53.

CMP You were cut out by some tower. Say again.

17 46 51 CC-H Okay, if that - if that thing is really giving you a problem, you can go ahead and secure it; I've got you good on S-band. But your correct low maneuver rate is satisfactory. And when we get to a DET of 53, we'll change it to a 1/2 degree.

DMP Right.

17 47 38 CC-H Apollo, Houston. We are 1 minute from LOS. Like I was - said earlier, we will not have ATS for this pass. It will not be available. We've already secured it. And we'll have you again, at Vanguard, in 45 minutes. Because we've been rather stingy with the SECONDARY EVAP, there - we're making up quite a bit of water. And we would like to go ahead and open the POTABLE INLET valve.

17 48 00 CMP Okay. Understand. Open the POTABLE INLET.

END OF TAPE

Day 203

TAG Tape 203-08/T-92
Time: 203:18:00 to 203:19:30
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

18 33 06 CC-H Apollo, Houston. We're AOS through the Vanguard for 6 minutes.

ACDR Okay, Crip. Look, we got one problem on the ETE. It said in there that the sample - the TE temperature for samples 2 - well, anyway sample 6 that we're working on now should be between 10 and 12 degrees. It's minus 44, and it stayed that way. So we've held up until we could talk to you. Over.

CC-H Okay. We copy that. And while I'm trying to get a reading on that, I'd like to tell you that we're going to delete this X-ray cal called out in your Flight Plan to be doing at this time.

CMP Okay.

ACDR Okay.

CC-H Also, I'd like to - because of the problem we had earlier with that cal source, we're going to modify our SM experiment cue card to delete the cal off of that also, on our normal powerdown. If you - if you got that cue card handy, we can go ahead and make those changes.

CMP Okay. It's scratched out of the Flight Plan and coming off the cue card now.

CC-H Okay. And that's just delete that first step: X-RAY PURGE to CAL and hold 30 seconds under the powerdown, and - Stand by 1. Okay. That's - that's all we need to do is to get it deleted off there, so we won't - won't be going to cal anymore. And - -

CMP Okay. And - -

CC-H Go ahead.

CMP - - by the way, Crip, I - I think this raster maneuver we did worked pretty well, but I'd guess that it uses a quite a bit of gas. The maneuver rate seemed fairly high to me at a half a degree a second.

CC-H Yeah, we ran it in the CMS last night, and we were estimating 13 pounds.

CMP Yeah. Well, I think both rasters went okay.

CC-H Okay. Real good. Appreciate that report. Could we get a verification of the position of the FREEZE switch on - on the ETE?

18 35 05 ACDR Yeah, okay. We went back, and we're checking some things. Looks like we - we had missed a step in turning a page there. We didn't have it to COOL, it's cooling down right now.

CC-H Okay. Real fine. Incidentally, you guys might be interested to know, we got - got three good-looking ladies back here in the - in the VIP room enjoying a little bit of the TV that you guys have made during - during this mission.

ACDR Oh, is that right? Well, tell them hello for us.

CC-H Well, I think they can probably hear you right now.

ACDR Hello there.

CMP Hello. Hi.

18 35 46 ACDR We've been so darn busy, we haven't had a chance to even think hardly about saying hello up here for a few days.

CC-H Yeah. We've had you running around pretty - at a pretty good pace.

18 35 56 ACDR I hope they all look relaxed and refreshed back there.

CC-H Oh, absolutely.

CMP Ask them how everything's going - ask them how everything's going on the homefront there.

CC-H I think everything's been going good. Ah-hah, I've been informed that they aren't hearing me; I'll correct that.

CMP Are you still there, Crip?

CC-H That's affirm. We've got you about 2-1/2 minutes.

CMP Okay.

CMP Which TV are they viewing, Crip?

CC-H Well, we just saw the initial docking, and right now we've got the one where Tom is standing by to open hatch 3 for the first time. I don't believe the girls heard you say hello, so how about giving it to them one more time.

CMP Okay. Hello. Hey, how you doing down there?

DMP Hello to the wives is what he's trying to say.

CMP Too bad they can't answer.

CC-H Yeah, one-way voice isn't too good.

ACDR That isn't too bad at some times, you know.

CC-H Ah, yes.

DMP Glad you said that instead of me, Stafford.

ACDR Just kidding about that (laughter).

CC-H (Laughter) You are in trouble.

ACDR Okay, Crip. We're down there, and we'll press on here.

18 38 11 CC-H Okay; fine. Let's see if I can get you some words. We may want you to modify on that ETE.

CC-H Tom, can you verify for us that - that we did get that sample; it was frozen. If it is, we probably need to go ahead and remove it; take it out of the cradle to let it - let it defrost.

ACDR Sample?

CMP Would you repeat that again?

CC-H Okay. That's - did - in your opinion, did we freeze the sample that we currently got in there? The column, rather?

DMP Oh, no, no. This is what we took out of the sample. It's number - out of the freezer - it's number 6,

and put it in for the 10-minute wait period, and at the end of 10 minutes, the temperature's supposed to be 10 to 12. We were in the process of passing the checklist on - around here. We missed one step, and that was to turn it to COOL prior - -

CC-H Okay. So - -

DMP - - to doing that.

18 39 27 CC-H Okay. So the column - -

DMP We never got to - -

CC-H - - the column is not - -

DMP We never got to - -

CC-H - - frozen. Is that correct?

DMP Positively not. It hasn't even started yet.

CC-H Great.

DMP We sort of - -

18 39 34 CC-H Okay. Going over the hill. See you at Goldstone in 16 minutes.

DMP Okay.

18 56 04 CC-H Apollo, Houston. We're AOS at Goldstone. We have you for about 3 minutes.

ACDR Roger. Through Goldstone. What area we over right now, Crip?

CC-H Coming over Baja.

ACDR Roger. Baja.

CC-H Okay. We're a minute from LOS, and we'll have you again at Newfoundland in about 8 minutes. And might remind Deke again that this is his pass over Wisconsin, coming up at about 41 after the hour.

ACDR Roger. And we're right over the Rio Grande River now. Yeah, I wish the girls could see this site up here that we're seeing, Crip.

CC-H Yeah. Right now we got the TV playing for them of Vance doing science demo things over in the Soyuz.

ACDR We're right over El Paso. You can look down and see Dick's Air Force Base and the International Airport.

CC-H Roger.

18 59 57 ACDR Okay, Crip. We're - looks like we're approaching Amarillo now.

19 06 10 CC-H Apollo, Houston. We are AOS through Newfoundland. And with the ATS, we should have you about 50 minutes.

ACDR Roger.

CC-H Okay. And we got it rigged up where the girls are listening to you again. Incidentally, if - to help this problem we've been having with some of our interference, one of the things that - about the only thing we can come up with doing on VHF is to go ahead and select SIMPLEX Alfa now, instead of staying in Bravo, and that'll change the freq and might - might get rid of some of it.

DMP You want to go to SIMPLEX Alfa right now, huh?

CC-H That's affirm, Deke, if you would, please. You can go ahead and go Alfa, and Bravo off.

DMP Super fast up through the Midwest there.

CC-H Came over pretty fast?

DMP Kansas City, Madison, Milwaukee, Chicago, Detroit, and the whole business.

CC-H Rog. Was it pretty clear?

DMP Could see the cows down there on the farm. Yeah.

CMP Unfortunately, it was covered with clouds over Sudbury nickle and certain sights that I was to get. But it is very impressive. No doubt about that.

CC-H Rog. Incidentally, Vance, while I've got you there, that last pass we had you guys run - end - ended up leaving you in 1/2 degree for your rate on your DAP. And you can go back and change that to 0.2 whenever you'd like.

19 07 44 CMP Okay. And we'll - we'll do that right away.

CMP Incidentally, we did get to see the Adriatic. Got quite a few pictures of the lower half of Italy, from the boot up to - oh, I think it's - oh, I'd say about halfway up. But it - it was a cloud cover over Venice.

CC-H Copy that. Thank you very much.

ACDR Hey, Crip, tell the girls I wish they could - -

19 10 05 ACDR Hey, Crip, we just had a big iceberg out here in the North Atlantic, and it has a trailing wake behind it.

CC-H Copied. A large iceberg with a - trailing wake, is that correct?

ACDR You see, it's like a, you know, like a - a bow wave on it.

CC-H Rog. Tom, we ended up dropping out there on VHF when we were trying to switch over and get ATS. And I'm back with you now on VHF. Don't think we got ATS voice locked up good yet. But I think you were just about to make a comment to the girls, and I don't believe they heard it.

19 10 33 ACDR I said I wish they could enjoy this view we're having up here today, looking down at the Earth.

CC-H Rog. I imagine that's quite a sight.

CMP Even seen Chicago a couple times up here.

DMP Tell them we're trying to get them a new picture, so they can enjoy it.

CC-H Very good. Bring them back, and we'll all be able to have a chance to take a - take a look at that beautiful view you guys got.

19 11 43 CC-H Incidentally, the Flight Plan calls for me to give you an update for the mapping pass you got on - mapping pass number 10 - you've got on the next - next rev. And that time is nominal. We do not need to change that. Any time that it might be convenient for you guys, I have a rev 138 block data pad that we can go ahead and update to you.

ACDR Rev 138 block data pad. Okay.

CC-H Yeah, we need to - need the Updates Book. But need to make sure I'm locked up good on the ATS before I give that to you. And apparently we're not yet.

CMP Okay. Before we go into that, Crip, we haven't seen any icebergs in the Southern Ocean. Been very hard to see the Antarctic area due to cloud cover. Haven't seen any stray icebergs down there. This is the first iceberg we've seen. Might just mention that, up here in the north, it was traveling through a - looked like a fog layer - and leaving a wake. Or else it was stationary, and the wind was blowing the fog a little bit and leaving a wake. No evidence of rotation, which is one of the questions they've asked about icebergs in general.

19 12 52 CC-H Okay. Sure that we'd - be happy to get that data.

ACDR Okay. You got the echo.

CC-H Okay. We'll bring the VHF down and get rid of our echo problem here.

CC-H Okay, Tom. Did I understand you had the Updates Book there?

ACDR It's in work right now.

CC-H Okay.

ACDR And you can tell the girls that we're going to open some of Rita's little delicacies right now for the noon meal.

CC-H Rog. Well, why don't you tell us what good things you're eating today?

ACDR Well, every day's a surprise.

DMP We never know until we open it.

CC-H You never know. Sometimes then you don't know, right?

ACDR Right.

DMP Well, we got to say it's really pretty good in general. We can't complain about it. I think we're all getting fatter.

19 13 55 CC-H All getting fat from being fed so well.

CMP It's really funny how taste changes up here, though. I like coffee on the ground and don't particularly like it up here, but like tea instead.

CC-H I think we've heard comments similar to that before.

19 14 17 DMP I think the problem with the food up here is getting it ready to eat. I guess it's the same problem as we got down there. We'll appreciate our wives more when we get home.

CC-H That's affirm. Now they could put you to work in the kitchen, and you'd appreciate a little bit of the problem.

CMP I wish Deke hadn't said that.

CC-H Yeah, y'all are going to be in trouble when you get back.

19 15 01 CMP I'm ready for your block data there, Crip.

CC-H Okay. Coming at you. Note it down for rev 138, and coming at you with NOUN 33. 224:15:20; minus 189.2, all balls, plus 017.6; 357, 336, 007; 171.9; 00:07; 203, 1627.6, 25749, 25:54; 27:17 Downrange error is not applicable. 317/057, 33:04, 35:52; plus 22.00, minus 162.83. Readback, please.

CMP Okay. This is block data for rev 138. Gee, we're getting a lot of revs, aren't we?

CC-H That's affirm.

CMP 224:1 - 224:15:20; minus 189.2, plus all zips, plus 017.6; 357, 336, 007; 171.9; 00:07; 203, 1627.6, 25749, 25:54; 27:17, the NA; 317/057, 33:04, 35:52; plus 22.00, minus 162.83.

CC-H Okay. That's a good readback. For remarks, CM/SM sep is yaw right to 052 degrees. Number 2, NOUN 48 trim angles; pitch trim is a minus .08; yaw trim, minus .78. Number 3, CSM weight 25311. And note 4, this assumes that we complete the DM 1 and 2 burns following the jettison.

19 17 59 CMP Okay. Added notes. Sep yaw right to 052 degrees. Pitch trim, minus .08; yaw trim, minus .78. Weight, 25311. And this weight assumes we perform DM 1 and 2 burns.

CC-H Rog. The whole - the whole pad actually assumes that.

CMP Right.

CC-H Okay; that's a good readback. You guys can sit back and enjoy your lunch.

CMP Okay. Will do.

ACDR Rog. It's a beautiful view the way the whole ground is just kind of grayish down below, just like a haze or fog.

CC-H Rog, Tom. We missed the initial portion of your comment due to a data drop but we're back with you. And we caught the bit around the beautiful view.

ACDR Rog. We're just going into nighttime.

CMP Crip, you still there?

CC-H That's affirm, and we got you for, oh, another 25 minutes or so.

CMP Okay. The gals still there? We could talk about the meal a little more here in detail.

CC-H They are still here and still listening. And be appreciative any words you have to bestow upon us.

CMP Okay. Tom and Deke just sorted out the food here and passed it out. We have our little trays plastered down on the MDCs, the instrument panel with gad - with springs. We're sticking the food on with Velcro. I have meatballs with barbecue sauce and the - something in a can here, haven't examined yet. Whoops, tuna. Can that be? Oh, hey, no. The tuna is mine, and Deke gets the meatballs. Okay; and a grapefruit drink and pecan cookies, and I'm still looking for the rest.

CC-H I hope you've been having little bit better luck finding - finding the food lately.

19 22 49 CMP Yeah, we did. It was a - there was a learning curve there. I think the food was packed very tightly, and when we pulled the first few items out, why, it was hard to keep everything from springing away, and eventually we started collecting things and then found it.

CC-H Probably had the occasion to - -

DMP Yeah. I got my kids' favorite diet here - meatballs and spaghetti. The problem is they're all macaroni and cheese, which replaces the spaghetti, as usual. It doesn't rehydrate. So I'm going to put it in the trashcan and eat a can of salmon that blew off. Vanilla for - pudding for dessert, and - let's see here - grapefruit juice and almonds. That's about it, so far.

CC-H Sounds like a delicious meal. Have you tried - have you tried rehydrating that macaroni and cheese and letting it set around awhile?

DMP Yeah, I sure have. The problem is the water never gets up to the top edge when you have to open it. So when you open it, it's like a bunch of worms crawling out of there. You know that dry stuff sort of gets to you.

CC-H Rog.

19 24 04 DMP I close it quick and forget it.

CC-H Yeah, you have to - have to be on your toes up there.

CMP Incidentally, I've lost my spoon three times, and found it shortly thereafter. And anything floats away. You just - just can't afford to just leave anything unattended for more than 5 seconds. And quite often, things unstick themselves and float away.

CC-H Got to be on your toes to try to keep everything tied down.

ACDR Yeah, Crip, at times I'll swear you could lose an elephant up here and not find in this spacecraft - the - you know, the way it's stowed around.

CC-H Rog.

ACDR Okay; let's see. I've got a strawberry drink, peach ambrosia, cheddar cheese spread with rye bread, sliced beef with barbecue sauce, and hot potato soup. That should be it. And that's more than the normal Sego calories I usually have for lunch.

CC-H Yes, quite a bit more.

19 25 59 CC-H You would not believe the shoes our friendly INCO is wearing today. Ben Franklin's really outdone himself.

ACDR What color are they?

CC-H Well, it's kind of hard to describe. There's some blue, and some brown, and a few other colors involved in it. Makes him at least 4 inches taller.

DMP Sure leaving us open for comments, when we were just

CC-H Rog.

CMP Well, he wasn't always conservative anyway.

CC-H Well, I always thought Ed was kind of a conservative guy. I'm really surprised to see him - but he's coming out of his shell. That's it.

ACDR He's always been rather bashful, ever since I've known him.

CC-H Yeah, he's always sort of the quiet, unassuming type.

ACDR Right.

19 27 15 DMP We've probably never mentioned to you that we ran out of our most important expendable - Kleenex.

CC-H Now what is the - I'm standing by with bated breath to hear what's the most important expendable. I've got a few ideas what I might consider that, myself.

DMP The old dry wipes.

CC-H The old dry wipes are all gone.

DMP Called Kleenex.

CC-H I assume that's due to all the liquid we've had up there.

DMP Yeah, and, unfortunately, these Beta cloth towels don't absorb very much of anything.

CC-H Yeah.

CMP Actually, there's a half a box left, and that's really being rationed.

CC-H (Laughter) Okay. I was getting worried about you guys up there for a while.

DMP Okay. Got to - -

ACDR Well, it's - -

DMP - - send out for it.

ACDR - - going to be ready to come home pretty soon with just a half a box of Kleenex left and one change of underwear left and - plenty of food. But with the underwear and the Kleenex getting short, we'll be home shortly. And we won't - won't bring it home to have them washed either. Just - -

CC-H You won't have - -

ACDR - - leave them in the docking module.

CC-H - - won't bring them home, huh?

CC-H Well, I'm sure the girls will appreciate your leaving them there. Too bad you don't have some of those - of those kind that Bo was describing to you this morning.

ACDR Yeah, that sounded real neat.

19 28 33 DMP I tell you, we could use them right now.

ACDR We ought to meet the wives right now. We both - both need a couple of cans of deodorants, I think.

CC-H (Laughter) I imagine so.

CC-H Well, that'll put you in good shape for one of those shipboard showers.

ACDR I hope it isn't saltwater, like the Navy tradition there, Crip.

19 29 03 CC-H Oh, no. We've - we've come a long way since those days.

END OF TAPE

Day 203

TAG Tape 203-09/T-93
Time: 203:19:30 to 203:21:00
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

19 32 13 CC-H If you guys could look almost straight up right now, you're directly under the ATS.

ACDR How about that.

CC-H Can you see 22 000 miles?

ACDR Not an object that small. That satellite's been doing a fantastic job for us.

19 32 33 CC-H It certainly has. That - it's really been super. That would have made this mission a heck of a lot more complex and not nearly as successful if we'd not have had it.

ACDR Right. We're all anxious to see those TV pictures that the wives are seeing right now, after we get back, to see how they turned out.

CC-H Yeah, they're - they're all super. What the guys did here, was to take them and put them together in sort of a scenario of your mission, and - made a nice - nice little clip for them. And the girls are all departing the area now, so they'll - they'll see you when you get back here on Saturday.

19 33 13 CMP Okay. Tell them we'll see them shortly.

CC-H Roger.

19 36 39 ACDR Okay, Crip, just to review one thing. You said that the mapping to pass M10 was nominal for times? Over.

CC-H That is affirmative.

CC-H Apollo, Houston. I'm sorry my last - to you apparently didn't get - Tom, yes. Your time on M10 is nominal.

ACDR Yeah, I got it. We just did a recheck on it.

CC-H Okay.

19 38 01 CC-H How's the temp doing up there now? It's kind of - kind of difficult to judge sometime, looking here at suit temp and cabin temp, just how comfortable you guys are.

CMP Not bad.

CMP Seemed to me it got the warmest - from late last night and early this morning. And now it's getting better.

CC-H Rog. And we kind of thought that after you guys had been quiet down there that it would - would not have gotten so warm, but - -

19 38 48 ACDR Well, the - one thing, the VTR was on all last night.

CC-H Yeah, that - -

ACDR That's really a heat source.

CC-H Yeah, that's what - what must have driven it up.

CMP That seems to be the biggest factor, for some reason.

CC-H Rog.

CMP Or the biggest factor that we can vary.

19 39 08 CC-H Rog. Wonder if I could talk to Deke a little bit about - about his upcoming OBS exercise. We got a couple items here that we'd like to at least review with him.

ACDR He's off his headset now. We'll get him on in just a - -

CC-H Okay, there's no big rush. We got about - oh, another 8 minutes or so through the ATS here, and I'm going to have you a couple other places, too.

DMP I'm back on here, Crip. What was that?

19 39 46 CC-H Okay, Deke. Due to some of the problems that we've been running to on this OBS, had a couple of notes that we'd like to get to you. One of the things is that we're going to recommend, if you don't mind doing it, is to use that disc tape to go over the electrodes. We think that that might hold them down a little bit better when you're exercising. That - there's some of that tape located in R-13 in the med kit.

DMP Okay. That's the same kind of stuff they launched us with, huh?

CC-H That's affirm. The stuff that feels so good when you pull it off.

DMP Yeah.

19 40 26 CC-H The other item was that after you get it all hooked up we're going - we'd like to - we'd like to look at you for about 5 minutes at rest before you - before you do the exercise, and then we'll work it looking at you here from the ground. Then give you a GO when to start the exercise and so forth. That way we won't do any for naught.

DMP Okay. No problem. We need the exercise anyway, ... don't object to that.

19 40 55 CC-H Rog. Understand.

19 41 07 DMP I'm not optimistic at this stage, but I'll do - we'll do it all right. But I guess it was my feeling when we started in with this thing it was going to be very difficult to combine exercise with the biomedical data just because of the configuration of that exerciser relative to the belt and the sensors.

CC-H Yeah, we understand. And we appreciate all the cooperation you're giving us on - on trying to help get it. Also, after - after you do your exercise, they're going to want you to sit there about 5 minutes of postexercise, too. And we'd like - and we'll be telling you from time to time, probably, to press against the electrodes. When you work up a good sweat, sometimes they tend to come loose a little bit.

DMP Okay.

19 42 43 CC-H For the DP. Deke, can you help us out? We're not showing the furnace operating, and it was called out for at about 174:40. Did we ever get that - that sample in?

DMP Yeah, we got the sample in.

CC-H Did you ever go ahead and - -

DMP Better check in the Flight Plan here, quick. Don't think we ever activated it.

CC-H Oh, so that's - -

DMP - - just check here. ...

19 43 06 CC-H Okay, that's - I think, the problem. Appreciate it if you'd get that on for us.

DMP Okay. We must have missed a block there. I'll go back and pick it up.

CC-H Thank you.

DMP Okay. I guess I got too enthused looking out the window there. I went right by it. I'll get with it.

CC-H Okay, thank you, sir.

19 44 09 DMP Before we go off the air, got just a data point for the guys. I did grease the plugs - those last - -

CC-H I'm sorry, Deke, you were cutting out. Could you say again?

DMP Yeah. A data point for the furnace guys. I greased the plugs before I put the last sample in. They were beginning to feel pretty sticky, and I was getting concerned that we might have trouble getting them out.

19 44 34 CC-H Okay, real fine. Appreciate that info.

19 44 57 CC-H And we may lose you here in a few minutes. Our next station contact is going to be in 15 minutes through Orroral.

ACDR Roger, Crip.

19 59 58 CC-H Apollo, Houston. We're AOS at Orroral, and we have you about - about a minute here.

20 04 50 ACDR Hello, Houston; Apollo.

CC-H We're with you, Tom. Through the Vanguard for 7 minutes.

ACDR Roger. Understand. Looking ahead for the EUV X-ray that's scheduled at 176:30. Is that - is there going to be any update to that? Rev 108, EUV pad. Over.

20 05 10 CC-H Negative. We're - to do something different, we're going to do that one nominal.

ACDR (Laughter) How about that!

CC-H Stand by for the next one.

ACDR Okay. What about the start time? That couldn't be nominal.

CC-H Yeah. Start time is nominal also.

ACDR Absolutely unbelievable.

CC-H We figured we wanted to do one that way.

ACDR Okay.

CMP *** CM burn for that, huh?

CC-H You dropped out there, Vance, and I couldn't hear you.

20 05 48 CMP I say, we can thank FDO's ACM burn for that, huh?

CC-H (Laughter)

CMP For something - for being nominal.

CC-H Right. Right. Absolutely. He'll take any credit that he can get. Vance, there's a little note you got coming up at 176:20 regarding some O₂ TANK HEATER configurations changes, and you've already done those, of course. You don't have to go down and mess with them again.

CMP Okay. Very good.

20 06 20 CC-H One item I was going to talk to Deke about here. We were looking ahead in the Flight Plan and we know, of course, we're running a little bit behind on that ETE. And we were considering that we might be able to go ahead and get his donning the OBS and that exercise out of the road. Just pull it up earlier,

and then pull - get the ETE following that, if he doesn't consider that too soon after - after his eat period. Only restriction, of course, on that is that we do need to be in ATS coverage for his OBS data.

20 06 52 DMP Okay. I don't know how that matches relative to eating. We're still eating, but I'll check it, Crip. We got another conflict here. We got a mapping pass scheduled at the same time we're doing ETE, and that requires the same camera. So I guess we've done a quick drop here and figured we can probably fit the mapping pass in between ETE samples here, the schedule we're under right now. So I'm inclined to hold off on the next ETE until the mapping pass is over.

20 07 19 CC-H Rog. Let us talk about that here a minute.

DMP Okay.

20 09 08 CC-H Apollo, Houston. Deke, regarding the camera conflict you mentioned, there is one - if we look in the - in the pad for that - or in the time line in the book. We want to use, in this case, the silver camera for mapping, and we want to delete the targets that we've got called out for vis obs - at 2 Charlie and 2 Delta. We do not want to do both. So we want to use the silver camera for - for mapping, and we go ahead and we can use the black one for the ETE.

20 09 42 DMP I think we could do both, Crip, if they really want it. We'll try to work that in.

CC-H Okay. That - what I just called up to you was the original way we had intended it to go, though, and - but you guys can see what's happening better than we can.

20 11 00 CC-H Apollo, Houston. We are 1 minute from LOS. Our next station contact in 16 minutes at Goldstone; that's at 176:05. And, in case it wasn't clear on my last call regarding those vis obs sites, 2 Charlie and 2 Delta, those are visual only, and we don't have to use the camera. So that - that would relieve any camera conflict that we had. Silver camera for mapping, and the black one would be free for - for use with the ETE.

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20 11 27 ACDR Okay. We copied that.

20 26 53 CC-H Apollo, Houston. We're AOS Goldstone, 6 minutes.

ACDR Roger. ...

20 31 55 CC-H Apollo, Houston. We are 1 minute from LOS. Our next station contact through Newfoundland in 6 minutes. I want to remind you not to configure - not to forget to configure the DSE by going to LOW BIT RATE, and also UP TELEMETRY to RELAY, as called out in the Flight Plan there, after you finish your mapping pass. Also, if Deke can, I'd like to get an estimate as to whether he wants to try to go ahead and get that OBS exercise in early, or is he going to go ahead as called out in the Flight Plan?

20 38 35 CC-H Apollo, Houston. We're AOS Newfoundland. Should be with you for 50 minutes.

20 41 28 CC-H Apollo, Houston through Newfoundland. Might notice that your ATS angles here are kind of - are hid in your pad there. So, to lock up, we need a pitch of minus 30 and a yaw of 290.

ACDR Roger, Dick. Set in.

CC-H Okay.

20 42 13 CC-H Apollo, Houston. Tom, just so that nobody could say that we did anything completely normal, we are going to want to cycle that X-ray instrument on and off a couple of times through this pad. If we get the ATS locked up, it would probably be easier for me just to go ahead and call you when we - when we want it on and off.

ACDR All right.

CMP And, Crip, you'll have TM on that mapping pass only for the last minute of it, or a little less - about 40 seconds.

20 43 08 CC-H Okay. We'd gone to - we'd gone and commanded HIGH BIT RATE from here, so we assumed we had it. You're saying we didn't have the - cable hooked up? Is that correct?

CMP I meant PLAYBACK.

CC-H I'm sorry, Vance. You were - you were cut out there, and I didn't get it. I'd like to verify that we are getting - going to get the ATS locked up. Are you guys in attitude, and you set the - set the angles in for us? We got about 2 more minutes here through Newfoundland.

20 43 56 ACDR Roger. We're in the attitude of 103.70, 113.4, and 000.

CC-H That's affirm. And have we tried - tried locking up yet? Pitch of minus 30 and yaw of 290.

ACDR Set in. It's all set up.

CC-H Okay. And you're getting no - no signal. Is that affirm?

20 44 26 CMP We didn't - ... any signal strength yet.

CC-H Okay. Let me tell you quickly before we go. If you'd jot it down then, that - I don't know if it's going to do if we aren't going - we aren't going to get any data if we ain't got ATS.

20 44 40 CMP Okay. We can ask the computer where it thinks ATS is.

ACDR Our computer says minus 16 183, Crip.

CC-H Minus 16 183. Go ahead and try that.

ACDR Okay.

CMP Okay.

20 45 33 CC-H Knew that EMP was going to come in handy.

20 47 00 CC-H In the blind. We'd like to get UP TELEMETRY to RELAY on panel 230.

CMP Okay.

CC-H That didn't sound blind at all.

20 47 30 CMP Okay. You got it to RELAY, Crip.

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CC-H Okay. Thank you.

ACDR ... turned on the ... the Flight Plan?

20 48 04 CC-H Okay. We're back with you now on the ATS. And, Tom, it sounded like you were asking a question, and I didn't get it.

ACDR Roger. We got the - we're turning on the EUV and the helium glow right now. And the X-ray 1 and - Did you want that on? Or should we just wait for your commands on that one?

CC-H Why don't you go ahead, and you can turn it ON with the exception of the HIGH VOLTAGE POWER. And you can hold up on that, and I'll tell you when I want it. And - and right now, if you're down there, we'll also take the UP TELEMETRY switch to UP TELEMETRY once more.

20 48 38 ACDR Okay. Vance is there working.

CC-H Okay. Fine. Just as a little free warning, I'm going to - at the DET times of 1:15, 10:40, 26:35, and 34:32 is when I'm going to be requesting to get the HIGH VOLTAGE POWER on the X-ray turned to number 2. And we'll be leaving it ON about 2 minutes and then turning it back OFF.

ACDR Okay. To review. At 1:15, - -

CC-H To repeat once more, Tom. And don't let me foul up any of these maneuvers here. At 1:15, at 10:40, 26:35, 34:32 - each of those are called out DET times - we'll be turning the HIGH VOLTAGE to number 2. We'll leave it on from between 2 to 3 minutes and turn it OFF. And I'll call you on - as a reminder on each one of those.

20 49 50 ACDR Okay. And I'm marking it in, too.

CC-H Okay. Fine.

CC-H And also, if I could kind of get an update as to where - where Deke is as far as donning the OBS, and whenever he's going to be ready to - ready for us, he can just give us a holler.

CMP He's - he's going up there to do it right now - -
CC-H Okay. Fine.
CMP - - so we'll let you know.
20 53 15 ACDR And the HIGH VOLTAGE was ON on time.
CC-H Okay. Fine.
CC-H Apollo, Houston. Okay; you can go ahead and turn
 that HIGH VOLTAGE OFF anytime now.
20 55 27 ACDR Roger. HIGH VOLTAGE 2, OFF.

END OF TAPE

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TAG Tape 203-10/T-94

Time: 203:21:00 to 203:22:30

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ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

21 02 36 CC-H Okay. You can go ahead and give us that X-RAY HIGH VOLTAGE to 2 again.

CMP In you go.

ACDR Hello, Houston; Apollo.

CC-H Go ahead, Tom.

ACDR Okay. We've got a big leak here on the electrophoresis.

CC-H Copy.

21 03 21 ACDR As you look down at it - I just happened to notice as I turned around in the seat and looked down at it here, and Deke's not here with me. I had him knock off the - we decided to knock off the OBS because this thing's leaking. Can't tell whether the sample's ruined or not. The fluid is all around the right connector where it connects on, you know, to the sample. Yet, the tubes are on tight, and that rectangular cap with the two buoys that goes down to the sample is flush. It's tight, but there's a huge blob of liquid, probably a cupful, when I first started soaking it up here.

CC-H Okay. I understand that was on the right-hand side of the column, is that correct? When you're facing the unit.

ACDR You - you got air bubbles to the line on both - got air bubbles to the line, particularly big ones on the right, and a few on the left.

CC-H Copy.

ACDR Crip, Deke had a suggestion here that the next sample is a - doesn't require the liquids. Why don't we just scrub this sample and go on to that last sample.

CC-H Why don't - why don't we evaluate that. I guess we do need to go ahead and see if we can get Deke in that OBS because this is probably going to be about the only time we're going to have to get data on that. We'd recommend that he go ahead and proceed

with that. We'll try to get word with you - back to you on the other sample. And for Vance, he can go ahead and turn HIGH VOLTAGE POWER on X-RAY to OFF now.

21 05 07 CMP Okay; OFF.

ACDR And, Crip, I can see where - it's leaking out of where the right plug goes on the sample. And that rascal is down as flush as you can push it, but you push it a little more, and fluid eases out from it.

CC-H Okay. Just as a kind of an idea down here, can we tell about how long it's been running out now?

ACDR Well, the damn timer malfunctioned, and Deke's got the wristwatch, and he's up for the doctors taking exercise.

CC-H Well, never - Don't worry about it.

ACDR I'll have to go up there and find out.

21 06 28 CC-H No, Tom, Tom, that's not required. Don't - Forget about it. We - we're not set up to get - we're not getting data yet, so we hope Tom's not exercising; we're standing by to hear from him wherever - whenever he gets connected. I hope Deke's not, rather.

ACDR Stand by.

CMP He looks like he's almost there on connection.

CC-H Okay.

ACDR Houston, it's been running - it's been running 15 minutes.

CC-H Okay. Thanks a lot.

ACDR Okay. Houston, I got most of the water mopped up where I can, but I see just a slight flow is slowly collecting down in the bottom again.

CC-H Okay. We understood that you had turned it off. Is that correct?

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21 08 08 DMP That's right. We turned the power - we turned the
MODE SELECT switch to OFF.

CC-H Okay.

ACDR And it's probably not too much - just probably
residual stuff that's collecting there.

ACDR Did you read me when I said 15 minutes?

CC-H Yes, sir. We did. We copied that. Thank you
very much. Didn't mean to put you to all that
trouble to get it.

21 13 39 DMP Okay, Dick, how do you read me?

CC-H Reading you loud and clear here, Deke. How me?

DMP Okay. Okay, well, I'm all plugged into this stuff,
but I haven't put the tapes over the top yet be-
cause I wanted to see if everybody was happy first.
I don't want to have to stick those things on and
unstick them.

CC-H Well, let us take a look at it here.

CC-H Okay, Deke. We are not receiving acceptable data
yet. Why don't you try pressing each of the sen-
sors independently for us and see if we can get
it - improve it.

21 14 54 DMP Okay. Start in with - let me see here. Okay; the
left one, push it down on. Now I'll do the left
chest. And then the right. Right. And the upper
chest. And the ...

21 15 54 CC-H Stand by 1, Deke. Let me get back to you.

DMP Okay.

CC-H Okay, Deke. We are getting good data here now, and
if you can do it without moving around too much,
you might go ahead and put the tape covering over
them.

21 16 48 DMP Okay.

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ACDR Hey, Crip, do you have any idea how soon we're going to get a word back on electrophoresis?

CC-H We're trying to get it to you right now. I guess what we're - would like to do is to go ahead and remove that particular column without taking off the ends, and just stick it in a bag some place.

ACDR All right. That was just what Deke had suggested.

CC-H I - -

ACDR You want us to bring it back or throw it away?

21 18 18 CC-H We're trying to get a reading on that right now. And we can go ahead here coming up on 35, we can have the HIGH VOLTAGE POWER turned back ON, the X-RAYS please, in number 2.

CC-H And for Deke, as soon as you got it all squared away there, you can start your exercise there.

DMP Okay. How critical on time are you?

CC-H Pretty critical. We're about 10 minutes from LOS. We wanted to get - get some exercise and then wanted to get part of your recovery period.

21 18 56 DMP Well, I tell you. I'd suggest I start in without putting those extra tapes on then, because I had just lost the bag while putting the first one on - -

CC-H Okay, forget about the tape and proceed on with the exercise.

DMP Okay.

21 19 15 DMP Can you guys understand how that can happen when - -

CC-H I couldn't get all of that. Things - things kind of drift away from you, huh?

DMP (Laughter)

21 20 45 DMP Okay. I believe I am in an exercise mode, if everybody is prepared.

CC-H Okay, press away. Pull those muscles. Tote that barge; lift that bale. For Vance, you can go ahead and turn OFF the HIGH VOLTAGE, if you would please.

CMP Okay, it's OFF.

CC-H Okay. And for Tom, what we're going to do now, as soon as everybody gets squared away and can press on with it, we're going to go ahead and use the isotacho sample - the next sample that goes in the ETE.

ACDR Okay.

21 21 17 CC-H Main thing we just want to make sure is that you've managed to mop up all of the - all of the liquid around the electrodes as best you can.

ACDR The best I can with the towel since we're out of tissues..

CC-H Yeah, I understand.

CC-H Don't want to sacrifice that last box.

21 21 40 DMP Man, if you do that, you're going to get a bowel movement on EKG here.

CC-H I'm sorry Deke; I could not read you.

ACDR Okay, Crip. I still got moisture down in the right electrodes. I'm trying to dry it out as much as I can.

CC-H Okay. Copy that, Tom.

21 23 55 CC-H For the DP. Deke, we have a satisfactory amount of exercise now. If you'd just lay back and relax a little bit and let us look at you, we'd appreciate it.

DMP Okay. Nobody's going to object if I get some exercise today ...

CC-H No, we'd love to get you - get your exercise in here. Between running back and forth between the ETE, and the furnace and the OBS. Thought you were getting quite a bit.

DMP It isn't too easy doing a lot up here.

DMP On the ground it would kill you.

21 25 02 DMP Hey, Dick. Did the sensors look all right on this one, incidentally, during exercise.

CC-H That's affirm. It looked - looked great. Body's - everybody's just happy as a lark.

DMP Okay. Well, it's not surprising if it doesn't be-
cause I was just kind of checking as I was doing it.
The natural position for exercise is with your elbows
right on those darn left and right sensors. I keep
working on it ...

CC-H Whatever you say.

21 25 36 DMP If you're all happy, I'm not going to complain.

CC-H That's affirmative.

21 26 24 DMP Tell those guys I've got myself clocked at 64 revs
here. Like to see if they got anything any different.

CC-H I'm sorry, Deke. I was having trouble reading you.
For Vance, could I go ahead and have the HIGH VOLTAGE
ON, please? To 2.

21 26 39 CMP Okay.

CC-H Did I understand - Dick was helping me - sit here
and translate it. (Laughter) Did you say 64 beats
per minute you got all the way up to?

DMP I might have got to 72. That's the best I've been
able to do.

CC-H Well, for you, that's - -

DMP ... going to have to get it after I ...

CC-H - - that's a pretty high heart rate, isn't it?

DMP No, not on some days. You can tell them I check it
once in a while up here; I'm running 48 to 52 any
time I check it.

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CC-H I'm envious.

DMP Clean living.

21 28 15 CMP You want that HIGH VOLTAGE OFF while we're maneuvering here, Dick, or for a short time? I mean - Crip.

CC-H Oh, hey, we saw that - we think you got the ARM SAFE switch down there instead of HIGH VOLTAGE. Would you check that for us, please? That should be in ARM, and wanted the HIGH VOLTAGE to 2.

CC-H And I guess it doesn't make any difference now on the HIGH VOLTAGE. You can go ahead and turn it OFF.

21 28 55 CC-H Okay, we're about to go over the hill on the - the ATS here. And for you, Vance, I'll need to come - this vis obs attitude, we need to update that R2 on your NOUN 78's to the 6000 that we've been using instead of the 9000.' We'll see you at Orroral in about 2-1/2 minutes.

21 32 00 CC-H Apollo, Houston. We are AOS through Orroral for 3-1/2 minutes.

DMP Okay.

CC-H Hey, Deke - all the - our medic folks would - really appreciated all the efforts you went through to get that data. It all came out nice and clean here. It looked real good.

DMP Okay, fine. You got everything you want?

CC-H Yes, sir; everything was super.

DMP Okay, I'm going to go ahead and exercise awhile then - and get some.

CC-H Okay, fine.

21 32 43 CC-H And, Apollo, Houston. I got one item I guess I'd like to just get up, in general, anytime anybody's got a moment to take it. There's no rush on it. We can get it later if you're - now's a busy time.

CMP Go, ahead.

CC-H Okay, Vance, we would like to get the camera that we've currently got in 873 back in the docking module - camera only, not the cable - brought in and put on location 606, in order to get all set up and spiffed away for this early morning press conference that we've got scheduled in the morning.

ACDR Okay, is that - -

CMP You want 873 into the command module or docking?

CC-H I want it brought into th - into the command module and placed in location 606.

CMP Okay, got it.

ACDR And is that just the - just the TV and the monitor, or the cables and everything?

CC-H No, we do not need the cable it's connected to. I think we should have a cable still available there in the 606 location somewhere.

ACDR We do. Yeah. Okay.

21 33 52 CC-H Okay, and the only other item I've got - and we probably don't have time to do it here - is that - we have one last pad to do; that's this upcoming one on 109. And about 3 weeks ago, the - we had a satellite discover an E - a new EUV source, and we really could appreciate it if we could make a change in the pad. That will allow us to get it up to cover that particular target. And it's going to be several line entries but not nearly as long as some of the ones we've already made. If somebody is available at Hawaii, which comes up in about 15 minutes, I would certainly appreciate being able to read the modifications to you there. Incidentally, your recovery ship is also going to be active on - on your - VHF, and you might be hearing them when you come across there this time.

CMP Okay, real good. I'm sure somebody will be available to copy. Hope we can find out something about this new UV source here. And, we'll - go ahead and maneuver, okay?

CC-H Okay, fine - press on. And the PI'd really appreciate it. He's pretty excited about this new target.

21 34 58 CMP Okay.

21 50 30 CC-H Apollo, Houston. Hello at Hawaii for 6 minutes.

ACDR Hello, Dick. Coming up to Hawaii.

CC-H Hello, Tom. One thing that I've got to get up here is some changes to this upcoming rev on 109 pad so if somebody could whip it out, I'll give them to you real quick. It won't take but a couple minutes.

ACDR It's all whipped out.

CC-H (Laughter) Okay. If you're ready to copy, the first change is the - up there about three lines down at a time of 46 minutes. Over there in the note, change it to read "Manually roll to 140 degrees."

ACDR Roger. "Manually roll to 140."

CC-H Okay. Down at the time of 0 plus 00, just delete the "X-ray ops."

21 51 23 ACDR Got it.

CC-H Okay. A little further down at a time of 3 plus 30, I want to change all three of those numbers for the VERB 49 maneuver to the following: roll, 104.60; pitch, 078.90; yaw, 305.90. Go ahead.

ACDR Roger. Roll, 104.60; pitch, 078.90; and yaw, 305.90. Over.

CC-H That's right. Okay, right below that at a time of - I want to change the time of 5 plus 50. Delete that and change it to read "4 plus 18."

ACDR "4 plus 18" instead of "5 plus 50." Got it.

CC-H Okay. The next line down, I want to change the time of 6 plus 50 to read "5 plus 18," and then I want to change the roll number to read "107.60."

ACDR Roger. "6:50" changed to "5 plus 18;" roll now new number, "107.60."

21 52 43 CC-H Okay. And, also, over there under the data column under the notes, I want you to write in "X-ray ops." We want you do to an X-ray ops there at 5 plus 18.

ACDR Okay. And I guess that you, basically, will tell us when to turn it off. ... sync this one ...

CC-H It turns - it turns out on this one that we're going to leave it on the rest of the pass - they claim. If we need to turn it off, I will call you. Okay, the next change, Tom, is the next line down. Change the time of 9 plus 05 to read "12 plus 33." And change the roll to read "110.60." Over.

21 53 32 ACDR Roger. Time to "12 plus 33," "110.60."

CC-H Okay. Now, next two lines, the entry for 10 plus 20, I want you to delete that and delete the 135.90, and the next line down, delete the 12 plus 35 and delete the 132 plus 90 - point 90.

ACDR Okay. Let me get that again. It's 12 plus 33; the roll angle is 10.66. Delete the next two lines, which is 135.90 and 132.90. Over.

CC-H Okay. One correction, back - back up there at the time of 12 plus 33, the roll angle is the following: 110.60, 110.6.

ACDR Roger. 110.60, the next two rolls are deleted. Over.

CC-H That's correct. You got it right. Okay, one more change. At a time of 13 plus 50, in the yaw column, change it to read "000.00."

ACDR Roger. The yaw column is now back to 000.00 at 13:50.

CC-H Okay, Tom. Now let me go back up to the manual roll up there at 46 minutes and make - give you a comment about that. The middle gimbal angle you're going

to have to monitor, because it is going to get kind of high, and you will improve your - in other words, if you start your VERB 49 maneuver just as soon as you're through with the Earth obs, the middle gimbal angle will be not more than about 65 degrees. The longer you delay for that VERB 49 maneuver, the higher it will get. But at any rate, watch it closely.

21 55 19 ACDR

Roger.

CC-H

Okay. We're about 1 minute from LOS Hawaii. That was kind of a busy first pass. We'll be seeing you coming up here at Bermuda in about another 15 minutes and I'll call you there.

ACDR

All right. And real good. Are the ATS angles the same, because the last time we used our computer angles to lock on, the book was wrong. Over.

CC-H

Stand by just a second. Tom, those ATS angles are correct.

ACDR

Real good. Thank you.

CC-H

Okay. See you later.

ACDR

Say. One thing. Is the nominal time counting up at 177:58:36? Over.

CC-H

That's affirmative. It was less than 1 second off, Tom, and we've decided not to change it.

ACDR

Oh, real good. Thank you.

21 56 14 CC-H

See you later.

22 15 39 CC-H

Apollo, Houston. We think we can get locked up on ATS if you go to REACQ and NARROW.

ACDR

Hello, Houston; Apollo.

CC-H

Hello, Tom. Loud and clear.

22 17 45 CC-H

Apollo, Houston through the satellite. How do you read?

ACDR

Reading you loud and clear, and the helium glow and the EUV ops are coming on.

CC-H Okay. Real fine, Tom. It took us a second to get locked up there, but I'm reading you loud and clear. Looks like you're doing fine.

22 19 04 ACDR We want to trim our attitude a little bit. It's drifted out since we got there.

CC-H Tom, we think this one is okay. There's one of the later ones that's going to be real critical, and it's - that one down at 4 plus 18, but we'll be watching it with you down there.

ACDR Okay.

CC-H No harm done.

ACDR I was just trying to get it right on.

CC-H Rog. We appreciate it.

22 26 31 ACDR Houston, Apollo.

CC-H Go ahead, Tom.

ACDR Okay. Looking down in the checklist here, for the next roll angle, I have 110.6 degrees. I copied that down at 10 plus 33. Is that right?

CC-H It's - the correct time is 12 plus 33 - 12 plus 33, and I thought you read that back to me, but maybe not. At any rate, whether you did or not, it's 12 plus 33.

ACDR Okay. Got it. Yeah, I couldn't read my writing there. I was writing rather fast. I got it now.

CC-H Okay. Incidentally, while we've got a second, a breather here in the pad, there is no update to the light flash pad on the next page. That time is nominal.

ACDR In other words, the light flash is nominal.

22 27 16 CC-H Okay.

END OF TAPE

Day 203

TAG Tape 203-11/T-95
Time: 203:22:30 to 204:00:00
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

22 41 48 ACDR Houston, Apollo.
CC-H Go ahead, Tom.
ACDR Yeah, just wondering how everything's going.
CC-H It couldn't be going better. We've been following you going through this pad, and it's going real fine. And that new star that we - or that new target that we stuck in the middle there - we got good X-ray data and good EUV data on it.
ACDR Hey, that sounds great. Thank you.
ACDR Sounds like the X-ray's working better, then, huh?
CC-H Well, it - it ran all the way through that particular target, which was the one they wanted. After that, we started getting poor data and we just decided not to bug you and we would - we're planning on just powering it down at the normal time for the - for the pad. But it did its job for the target we wanted.
ACDR Okay.
22 43 57 CC-H Apollo, Houston. If you would, on panel 230, we'd like to CLOSE the X-RAY COVER, but we want to leave the HIGH VOLTAGE POWER on.
ACDR Roger. CLOSE the COVER, but leave the HIGH VOLTAGE POWER on. Okay.
CC-H Okay. Thanks, Tom.
22 44 31 ACDR Okay. She's CLOSED.
CC-H Okay. Tom, thank you. The - Turned out the data changed there for a minute, and we wanted to take a look at the background data by leaving the HIGH VOLTAGE on and the COVER CLOSED. So, Experiments Officer's looking at it now.
ACDR Okay.

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CC-H Apollo, Houston. It's possible that we may lose the ATS high gain. If we do, the INCO will be commanding on the DSE to get the data, so you don't have to worry about it. I would like to change one thing, and that is, at the end of the pad, we do not want you to power down the X-ray. We want you to leave it in its present configuration with the HIGH VOLTAGE POWER on and the COVER CLOSED, and we're going to look at that data for a while longer.

22 47 10 ACDR Roger. Got it. So, I don't have to command that DS - all I do is verify DSE tape motion. You want me to go at the very end, then, to LOW BIT RATE, COMMAND RESET, or forget it? Over.

CC-H Stand by. Let me check.

CC-H Tom, Houston. Affirmative. Just do exactly as the pad says there at the end - on the DSE.

ACDR Okay. The LOW BIT RATE, COMMAND RESET. Thank you.

22 48 08 CC-H That's affirm.

22 50 07 ACDR Crip, we don't have any tape motion over there, it looks like.

CC-H Okay.

ACDR Dick - -

CC-H Yeah. Yeah, understand. Yeah. Stand by, please.

22 50 51 CC-H Tom, Houston. We're about to start it now. We do have a good lockup on the ATS, and that's the reason we were delayed a little bit. But you ought to be able to verify it, here, very shortly.

ACDR Okay, real good, Dick.

CC-H Apollo, Houston. Looks like we prob - we may very well keep the ATS for the rest of this pass. But just in the event we don't, Bermuda - We've got a good long LOS here. Bermuda comes up at 179 plus 21. And this was the - the last of the complicated experiments pads, and I don't see how it could have gone more perfectly. Looks like a real good show.

ACDR Ah, thank you very much. We'll also thank you guys on the ground, because you really helped to pull us through here on an occasional mistake on a DSKY ... and ... , all this good coordination. Thank you.

22 52 49 CC-H Well, I was looking hard to catch a mistake that time, but I sure didn't see one. Also like to pass to Deke, again from the surgeons - I heard Crip talk about it awhile ago - that they got extremely good data and have an excellent current status, and recommend the same procedure for applying the sensors for reentry. And it was - that's from Peter Whittingham, our Royal Air Force flight surgeon here, and he says, "Good show, chaps."

ACDR Okay, thank you.

22 56 56 CC-H Apollo, Houston. Now that you've started that last maneuver, Tom, I'd like to talk to you a little bit about the - our water level and what we can do on the secondary evaporator.

ACDR Go ahead, Dick.

CC-H Okay, it turns out that we've got a choice, Tom, and we've done a little bit of talking about it here in the last 10 minutes. If you activate the SECONDARY EVAPORATOR, which is in the Flight Plan coming up here right after this pass at 178 plus 50, you can leave it on just about all the way to bedtime and then turn it OFF, and that will allow us to sleep with it OFF. But then it will - we - it will put us in a situation where we can probably turn it on in the morning. And then you'll have cooling just about all the way for the rest of the mission. It'll help us - -

ACDR Okay.

22 57 45 CC-H - - It'll help us in one more way, and that is, we are going to do some SIM bay experiments taking data all night tonight, and it'll help a little bit not to be dumping that water overboard. You do have another choice, though. You can leave the SECONDARY OFF now, and turn it on right at bedtime and let it cool all night. But - but if you do that, we probably will have to turn it OFF first thing in the morning

and spend most of today with it off. I'm not sure - We're not sure exactly what kind of situation we'd be in then at the end of tomorrow afternoon.

22 58 18 ACDR Okay. So you say, basically, if we leave it off now, we can have it from - starting tomorrow morning on, huh?

CC-H No. What I'm saying is now you can turn it on per the Flight Plan. In other words, activate it there where it says, "Activate PRIMARY EVAP," just activate the SECONDARY instead of the PRIMARY. And let it cool down the spacecraft for the rest of this evening, and then we'll deactivate it when you go to bed. And then you'll have - then you'll be all set in the morning to reactivate it and just leave it on.

ACDR Okay, real good, sounds great.

CC-H And - and our data shows that that should cool the spacecraft down real good this afternoon, and about bedtime should be real comfortable.

ACDR Real good. Thank you.

22 58 58 CC-H Okay.

23 01 15 CC-H Apollo, Houston. We're coming up on 2 minutes to ATS LOS. Bermuda comes up at 179:21.

ACDR Roger, Dick. Glad the run went real good for them.

CC-H Boy, that was super, Tom. I assume Vance and Deke didn't go EVA or something. I haven't talked to anybody but you since I got here. They didn't abandon ship, did they?

ACDR No. What we're doing is trying to get ahead of it, and we're already setting up the light flash experiment. Those two been working on it full time.

CC-H Roger. Sounds good.

CMP It's Tom's day to talk.

CC-H Okay.

CC-H Well, we'll see you at Bermuda.

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23 01 57 ACDR Okay.

23 44 16 CC-H Apollo, Houston. Bermuda for 7 minutes.

23 44 32 DMP Okay, Dick. Got you.

DMP We're now terminating ETE.

23 47 09 CC-H Apollo, Houston. Not much going on down here. I had a couple of comments for you. One was on film budgeting, and also a minor deletion in the Flight Plan later on at 183 hours or so.

DMP Okay. How much time we got here, Dick?

CC-H We got about 3 minutes, and neither one of these comments needs to be done for the next several hours, Deke. So if you're busy, I'll be glad to wait. No problem.

DMP Okay. Well AC is up for his morning constitutional, and CP's here on some other stuff, and everybody's off ... And I'm terminating ETE here. So if we can hold off, that'd be great; if we can't, I'll get it, though.

CC-H No. We can hold off for as long as we need to. No problem.

DMP Okay, great. Thank you.

23 49 48 CC-H Apollo, Houston. We're 1 minute to LOS. Ascension comes up at 179 plus 39. And, Deke, when you get a chance - on panel 230, we'd like X-RAY HIGH VOLTAGE POWER to OFF and leave the LOW VOLTAGE POWER, ON.

23 50 04 DMP Okay. HIGH VOLTAGE POWER, OFF.

CC-H Okay. See you at Ascension.

23 50 08 DMP Okay. Thank you.

END OF TAPE

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TAG Tape 204-01/T-96
Time: 204:00:00 to 204:01:
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

00 01 41 CC-H Apollo, Houston. Ascension for 4 minutes.
ACDR Okay, Dick.
00 03 30 DMP Okay, Dick. We're kind of in a coasting mode here for a minute; if you have something you wanted to read up, it's probably a good time to do it.
CC-H I'm sorry, Deke, you were real low. Say again, please.
DMP We're in a coasting mode here and if you got something you want to read up - it's a good time to do it.
CC-H Okay. Real fine. One note from - from Farouk and that was - has to do with film usage. If you want us to get into the act on planning film usage, if you would let us - sometime, anytime you have the chance, if you'd go through the - the unused and partially used mags for both the silver and black cameras and tell us how many frames are in vail - are available per mag, we'll be glad to help you. If you think you've got a handle on it, don't worry about that. And, also, if you'll turn in the Flight Plan to 183 hours, I've got a couple of simple updates for you. And incidentally - -
DMP Okay. Far as - -
00 04 29 CC-H I'm sorry. Go ahead.
DMP As far as the film, pretty good inventory on that, but I think we know where we're at pretty much on that subject. So, thank you.
CC-H Okay, Deke. And we're about 30 seconds to LOS - Guam comes up about 40 minutes from now at 181 - 180 plus 21, in case we don't get these readups here.
DMP Okay. We're standing by, 183 - -
CC-H Okay. Down in the DP column at 183 plus 20, I want you to delete X-ray from that ops there. And down below that, also delete - "Remove the cabin vent QD and stow it." We're going to need it tomorrow, we are going to do another purge, and we'll be seeing you on the ATS.

Day 204

CMP Okay. Okay, you say you will not do a purge - any more purging today, right?

CC-H We - we are going to do it tonight, but we do not want you to remove that vent QD and stow it. We want you to keep it out because we're going to use it tomorrow. And, also, delete the X-ray ops.

CMP Got it.

CC-H And we'll see you when we get locked up on the ATS.

00 05 48 CMP Okay.

00 21 24 CC-H Apollo, Houston through the satellite. How do you read?

00 24 49 CC-H Apollo, Houston. Do you read?

CC-H Apollo, Houston in the blind. If you read, we need to go back to P20 instead of P00 after that P52.

CC-H Apollo, Houston in the blind. If you read, we need to go back to P20 instead of P00.

00 27 02 DMP Houston, Apollo.

DMP Houston, Apollo.

CC-H Apollo, Houston. Deke, we - I read you now, and we need to reselect P20, Deke, per the Flight Plan there at - following P52.

DMP Houston, Apollo. Do you read?

CC-H Apollo, Houston. Deke, I read you very weak. I'm not sure I'm getting up.

CC-H Apollo, Houston. Deke, do you read?

00 32 59 CC-H Apollo, Houston. Do you read?

00 44 30 CC-H Apollo, Houston at Guam for 6 minutes. And on panel 230, we need UP TELEMETRY to DIRECT.

DMP I believe we've got everybody in position here for a good old Earth ops.

CC-H Okay, Deke. The reason that we missed that ATS pass, I think, is after the P52, we needed to go back to P20 instead of back to P00. So what I need to ask you to do is go back to the Flight Plan at about 178 hours and 45 minutes and call up and - and do those procedures there that recall P20, and that'll get us back to attitude, and we'll be all set.

DMP Okay, we're in the process of putting back to attitude right now, Dick. After doing the 52.

00 45 30 DMP Still with us, Dick?

CC-H Yes, affirmative; I am with you. We got intermittent data there during the ATS, but we didn't - we never did get it good enough to get voice.

DMP Okay. Well, we're in the process of maneuvering back to attitude here right now.

CC-H Okay. Real fine. And, Deke, anytime you want - to read me down the P52 data, that's fine. If you don't want to do it now - I can get it later.

CMP Okay. We're just trying to get cranking here on this - light flash thing so stand by a minute.

CC-H Okay.

CC-H And, Apollo, Houston. Down on panel 230, we need UP TELEMETRY to DIRECT.

00 47 31 DMP UP TELEMETRY, DIRECT.

CC-H .. That affirmed, Deke. And, Deke, if you have time before we get this light flash experiment started, we have about 3 more minutes here at Guam. I need to read you a correction to that next VERB 49 maneuver down on the next page at 182 hours and 15 minutes - and that follows the light flash experiment.

DMP Yeah, you're going to have to - We're already into this thing, and I'm having a little trouble doing everything here by myself - crawling over people and et cetera, so stand by 1.

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CC-H Okay. We got several more passes before it happens. I didn't realize that the guys had started yet; I thought they were dark adapting.

00 49 18 CC-H Apollo, Houston. One minute until LOS Rosman at 180 plus 52.

DMP 180:52. Do you have anything critical to give us? I can take it now.

CC-H Well, if it's handy, Deke, in the Flight Plan at 182 hours and 15 minutes, I want to change that next VERB 49 maneuver, that's 182 plus 15.

DMP Okay, go ahead.

CC-H Okay. I want to change the VERB 49 angles to 052, 023, and 312.

00 50 03 CMP 052, 023, and 312.

CC-H Okay. While you're right there, down to the left, I want to change the high-gain angles there to pitch of minus 29 and yaw of 279 and - and could you confirm that you got the UP TELEMETRY switch on 230 to DIRECT?

DMP Well, I'll have to go and reconfirm it.

CC-H Okay.

00 50 36 DMP We've all blacked out in here, so it's a little difficult to see anything.

00 50 40 CC-H Roger. Understand. We'll be seeing you at Rosman.

01 14 41 CC-H Apollo, Houston. Rosman for 4 minutes.

DMP Okay, Dick; we're with you.

CC-H Okay.

ACDR Okay.

ACDR MARK it. Got a small star in both - the right, followed by one in the left - in my left eye, right on the centerline in my left eye, horizontal.

DMP Incidentally, Dick. We're running with - both left-
and right-hand couches here in the VOX mode per check-
list. I don't really understand that, but we're doing
it anyway.

CC-H Okay. It'll probably help us on the ground monitor
you, anyway. And, Deke, if you get a chance, on
panel 230, we'd like the UP TELEMETRY switch back to
UP TELEMETRY, centers.

DMP Thank you.

01 15 42 CMP Okay. I got two events, in the upper right, I got
a - comma - -

01 15 58 ACDR MARK. I've had a long streak at the very top of my
left eye, a long streak. There's a little blast of
a star in - flat in the center of my left eye.

DMP Is that UP TELEMETRY you wanted, Dick?

CC-H That's affirm, Deke. UP TELEMETRY, that's center
position.

01 16 27 CMP In the middle.

CMP Are there terms other than - hotdog?

CMP Okay. Okay. I wonder if it's getting recorded then?

CMP Okay. I'll try to hold the mike closer.

CMP Okay. Review of some of the terms again, there's -
there's streak, long streak, hotdog, star, cloud,
double streak; okay -

01 17 52 CMP Okay, I got a star just then, upper left - tadpole.

01 18 03 ACDR ... in my upper left eye - upper left corner.

CMP That's the word I was trying to think of.

01 19 23 CMP Maybe we ought to boost her to a higher orbit - get
more of them.

01 20 04 CC-H Apollo, Houston. We're 1 minute to LOS, and we'll
see you when you get locked up on the ATS, Deke, at
130 - 181 plus 35.

01 21 30 CMP A streak - over in the right corner.

01 28 43 CC-H Apollo, Houston. It turns out in this attitude, that we are picking up some low-bit-rate data on the ATS and just wanted to remind you you're on VOX.

END OF TAPE

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TAG Tape 204-02/T-97
Time: 204:01:30 to 204:03:00
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ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

02 04 45 DMP Houston, how do you read through ATS?
CC-H Apollo, Houston through the satellite.
DMP Houston, Apollo. Go ahead.
CC-H Apollo, Houston. I read you but very weak.
02 05 08 CMP Okay, star, right eye, the lower part.
DMP Okay. We read you fine, Dick.
02 05 20 CMP Very large star, left eye, left - right eye, left side.
DMP We heard about 50, 60 percent of the signal there and it never seemed to come up so we tweaked it a little and peaked at 30.
02 05 32 CC-H Okay, I'm reading you loud and clear now, Deke.
DMP Okay.
02 05 39 ACDR MARK. A comma, center top of right eye.
DMP For the PI's info, things were pretty quiet through the old SAA.
02 06 09 CC-H Roger. Understand things were quiet going through the SAA?
DMP Yeah, not many sightings reported.
CC-H Roger. Understand.
CMP Okay.
ACDR Not on VOX. (Laughter)
02 08 38 DMP Say, Dick, I guess we never gave you that last 52, did we?
02 08 41 CMP Okay, had a star, upper right eye.

CC-H No - Deke, you didn't, but we're not in a big hurry. If you want to, we can just wait until this light flash experiment is over, and we can get it then.

DMP Okay.

CC-H Incidentally, let me clarify - I understand before what you told me that there were no sightings in the South Atlantic Anomaly - -

CMP Hold on.

CC-H - - a couple of people thought you said, maybe, it was since the South Atlantic Anomaly.

02 09 09 ACDR Okay, had a big bright tadpole left - left - lower quadrant, left eye.

DMP You heard me right, Dick, it was through what the Flight Plan at least shows as the SAA - very few sightings.

CC-H Okay, while we're talking about it, I had one more question here to ask you guys. Did - did they notice any hazy brightening of the background during that South Atlantic Anomaly pass? Or at any time during the start of the experiment?

02 09 41 ACDR No, I didn't notice any. And I guess I - just a number of sightings. We saw sightings, but I guess we were expecting to have just one after another and we didn't have it.

CC-H Roger. Understand.

CMP I didn't notice any brightening, either.

CC-H Okay. Thanks, Vance.

02 10 07 CMP Subtract one MARK button just now. I pressed the button to talk. (Laughter)

02 10 20 DMP God damn O₂.

02 10 33 DMP There seemed to be a flurry of them, Dick, just coming out of the SAA, just about that time.

CC-H Roger. Understand.

CMP Now that we're knee deep in Kleenex - -

DMP Dick, things are pretty quiet. I can start giving you the 52, and I'll just break on it if they see anything outside.

CC-H Okay, suits me fine; go ahead. I'm ready to copy.

02 11 42 CMP Stars - right eye stars, center.

DMP Okay, NOUN 71 is 35.36. NOUN 05, zero. NOUN 93: X, plus 92; Y, minus 79; Z, minus 1. GET, 179:56:55.

02 12 09 CC-H Okay, Deke; copy. Thanks a lot.

DMP Okay.

CMP Pretty quiet, huh?

DMP Hey, Dick, for whatever it's worth to the PI, it's my recollection that - the most flashes were reported shortly after we started, like right around 180:50 to 181 GET.

CC-H Okay, Deke - go ahead.

DMP Yeah, I was just guesstimating that we probably were in kind of max latitude there and probably the same when we saw the next flurry in this other hemisphere. But you guys can check that better than we can.

CC-H Roger. We'll - thanks for the input, and we'll get it all coordinated to the latitudes when we get the tapes back.

02 16 08 DMP Sure.

02 17 25 CC-H Apollo, Houston. We're a couple of minutes from ATS LOS; Goldstone at 182:18.

DMP Roger, Dick. 182:18.

02 18 39 CMP Yeah.

02 40 17 CC-H Apollo, Houston. Goldstone for 6 minutes.

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DMP Okay, Dick, fine. And we just completed the light flash, and we're taking some photos here before we tear it down.

CC-H Okay, Deke. I understand you completed the light flash, and you were very weak; I didn't catch the rest.

DMP Yeah; we're just taking a couple of Nikons of the setup here before we tear it down.

CC-H Oh, okay, fine.

02 40 56 DMP We've sure been getting a rash of O₂ - warnings here.

CC-H Roger. Incidentally, Deke, just for y'all's information, the reason we changed that VERB 49 maneuver that you are in the process of going to now, was to point the EUV, while you sleep, at a particular star. It's - will not change the ATS coverage during the night.

DMP Oh. Okay, thank you. Anything else we can do for you? We're now all available. ...

CC-H Well, why don't you just clean up the light flash and get yourself a good meal.

DMP Yeah, ...

02 43 13 ACDR Let me give them a call on that.

CC-H Apollo, Houston. Tom, did you call?

ACDR Yeah; got off VOX there. Look, we've been talking, Dick, about tomorrow morning, the press conference and the wake-up and getting ready. Why don't - why don't you wake us up at least 30 minutes earlier then because there's no way we can get up and get things squared away and shave and get squared away for that press conference in that period of time. Over.

CC-H Okay, Tom, let me - looks like we'll be having an ATS pass during that whole time so it probably would be easy for us to wake you up - Oh, I take it back here. We - there is an Ascension pass that's about 20 minutes early. And, as a matter of fact, there's

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TAG Tape 204-02/T-97
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a Santiago pass that's about 32 or 33 minutes early. Maybe - it's a real short one, but maybe we could give you a call right there at Santiago, 30 minutes early.

02 44 22 CMP Well, I won't even be awake by - -
ACDR Yeah, why don't you give us a call at Santiago?
CC-H Okay. Okay, Tom, we'll sure do that.

02 45 00 CC-H Apollo, Houston. We're 1 minute from LOS; Quito at 182 plus 31.

02 53 32 CC-H Apollo, Houston at Quito for - for 6 minutes, and we'd like ACCEPT, please.

02 53 41 DMP Okay; you've got it.
CC-H Apollo, Houston. Before we start our uplinks, I wonder if you could clear the DSKY off with a VERB 37. Guidance would feel warmer when he starts his uplinks if you do that. Thank you a lot.

02 57 31 CC-H Apollo, Houston.
ACDR Go ahead, Dick.
CC-H Hey, Tom, in order to keep our water in the right tanks - what we'd suggest is, is that you - while you're eating and drinking water, that you close the inlet to the potable tank, and then when you go to chlorinate it later on, open it, of course. And then after the chlorination is - is finished, about 15 or 20 minutes after that, close it and - we'll sleep with it closed tonight.

ACDR Okay. In other words, go to OPEN now, and then after chlorination, CLOSE it, right?

CC-H No, if it's already closed now, leave it closed until after you eat, and then open it for the chlorination, and then sleep with it closed.

ACDR Okay. Let me check it.

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CC-H Okay. And we're about 30 seconds from LOS. We'll
 see you when you get locked up on ATS.

02 58 40 CC-H And, Apollo, Houston. We're not through with the
 uplinks, we'll finish them on the ATS.

 CMP Okay, Dick.

 ACDR Dick, the POTABLE INLET valve is OPEN at this time.
 Do you want it CLOSED? Over.

02 58 54 CC-H That's affirm. Go ahead and CLOSE it, Tom, and
 we - yes, CLOSE it now.

02 58 58 ACDR Okay.

END OF TAPE

Day 204

TAG Tape 204-03/T-98
Time: 204:03:00 to 204:04:30
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

03 08 37 CC-H Apollo, Houston through the satellite. We already have ACCEPT, I believe, and we'll be finishing up our uplinks here.

ACDR Okay.

CC-H And, Apollo, Houston. When you guys settle down, and I don't know where you are, but if - when you settle down, if you would like to hear some news during your eat period, I'll be glad to read you up some.

ACDR Yeah. Okay, wait until Deke gets back on his headset here.

CC-H Okay. Anytime, Tom.

CMP Let her rip, Dick, if you're ready.

03 10 02 CC-H Okay, Vance. Of course, the big news today is still you guys. There have been many stories on the wires and in the papers concerning everything from Earth observations to killifish, and we're looking forward to the - to the entry that will be coming up in a couple days. The Ford Administration Tuesday unveiled its proposed gun control law that includes an FBI check on those who wish to buy handguns and sets certain strict standards for their manufacture. Attorney General Levi told the Senate Juvenile Delinquency subcommittee that the Administration's bill concentrates on illegal commerce in handguns and centers its new enforcement efforts on 10 large metropolitan areas where the problem of handgun violence has reached crisis proportions. Pushed by higher prices for food, gasoline, and used cars, consumer prices increased 0.8 of 1 percent in June, the biggest monthly rise in inflation this year, the Labor Department said today. The Senate today confirmed Dr. Forrest David Matthews, president of the University of Alabama, to be the new Secretary of Health, Education, and Welfare. Also on Capitol Hill, the House voted to end the so-called Fair Trade Laws that allow manufacturers to set retail prices on their products in many states. The measure, backed by the Ford Administration and consumer groups, was approved by the House 380 to 11 Monday

and sent to the Senate. The Upper House of India's Parliament today approved Prime Minister Indira Gandhi - they approved her declaration of a national emergency, touching off a walkout by members of noncommunist opposition parties. The House today voted to restore Confederate General Robert E. Lee's citizenship, which he lost after the Union victory in the war between the states. The vote was 407 to 10, well over the two-thirds needed for approval under House procedures to speed up action on the measure. The measure now goes to President Ford. The Senate approved the bill unanimously in April. In Los Angeles, California, police tried everything to get City Attorney Burt Pine's stolen official car back, even placing calls to the thief on the car's mobile telephone. No one answered, though, and the police issued an all-points bulletin Monday for the car, which was stolen Friday from a guarded City Hall garage. In sports today, Billy Martin has been fired as the manager of the Texas Rangers. Martin, who was the American League Manager of the Year in 1974, said the front office wanted a winner and a "yes man," and they can't have both. The Houston Astros - excuse me, the Houston Astros beat the New York Mets last night, 6 to 2. But the Astros are still 30 games out of first place in the National League West Division. And I'm just told that they lost the game tonight, 2 to 1. Cincinnati leads the West Division, while Pittsburgh is in the lead in the Eastern Division. When A. J. Foyt won a big auto race near Detroit Sunday, it assured the Houstonian of his sixth U.S. Auto Club Driving Championship. And, finally in sports, President Ford held a brief ceremony at the White House Rose Garden Monday to honor Wimbledon singles champions, Billie Jean King and Arthur Ashe. Deke, here's a story that you might be interested in. Today in Friendswood was Marge Slayton Day. A group of Marge's friends gathered at Brown's Pharmacy, that's Marge's favorite coffee spot, and greeted her this morning with a surprise party. She was presented a gold medallion. On the back it read, "Marge Slayton Day." And, also, a needlepoint commemorating the ASTP mission. When the newsmen asked her how she felt, she said, "I thought Deke was having all the fun up there, and now I feel like I'm having more fun than him." So you better get home.

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Page 3

CC-H Rog.

DMP Nice group of people around friendly ...

CC-H Roger. Well, it sounds like they're taking care of everything out there and remembering her very well.

DMP Yeah, got a bunch of fine people there; friendly folks in Friendswood.

CC-H Roger. And we're going to be changing ATS modes here. I'll drop out here for a couple of seconds and then I'll be back up. And, Apollo, Houston. You can go to BLOCK; the computer is yours.

03 15 27 CC-H Apollo, Houston. We've changed ATS modes now. How do you read?

ACDR 5 by, Dick. Just fine.

CC-H Okay. And while y'all are eating, here's one more message from the Silver Team.

(Music: "The First Time Ever I Saw Your Face" by Roberta Flack)

03 21 23 CMP Okay, very nice. Thank you, Silver Team.

ACDR Yeah, that was great.

CC-H Roger.

DMP Couldn't find the Glenn Miller album, but it was a great substitute.

03 21 41 CC-H Incidentally, when you guys get through with your meal up there, I've got my normal little list of little things to - to pass up to you. We've still got 35 minutes in this ATS pass so when you get a moment, or - and you get through eating, we might talk a few minutes. But no hurry.

(Music)

DMP Just thought we'd return the favor there, Dick.

03 27 32 CC-H Roger. We enjoyed that. The G&C, Terry Watson, said he wasn't sure that was a fair trade for Roberta Flack, but we - it was still good.

03 40 06 CC-H Apollo, Houston. We still have about 15 minutes left here in this ATS pass, and I wondered if we could take 4 or 5 minutes out and let me read you a couple of changes in the Flight Plan and also get down your - some of the presleep stuff and tell you the things we needed done before you go to bed.

ACDR Sure.

CC-H Okay. One thing while I'm getting ready. I've got a chance in the Flight Plan at 183 hours and 20 minutes or so. And, also, we're standing by to look at the VERB 74.

ACDR Okay, Dick. I've got a pencil.

CC-H Okay, Tom. First thing, I want to change the high gains over there in Deke's column. They should read pitch, minus 7; yaw of 274.

ACDR Roger. That's minus 7 and 274.

03 41 16 CC-H Okay, Tom. And right above that - you see where it says, "EUV to ops per the cue card." One change that we'd like to do tonight is that we would like to use detector 1 instead of detector 2 as it's listed on the cue card. And the reason is because of the dead ba - band we're sleeping in tonight. That detector has a more proper field of view, so just use - you might just jot it down there to use detector 1 tonight on EUV.

03 41 45 ACDR Okay, on EUV that we leave on all night, detector 1.

CC-H That's correct. And back to the sample number 7 that was leaking today, if you'd - if it's still around and you can find it, we would like to bring that thing home. Our suggestion is - is that you wrap the sample in a towel and then place it in an extra fecal bag that has the germicide pouch removed, and stow it in A-6 for entry.

ACDR ... (chuckling) the instruction says throw it away, so it's in the garbage bag some place and we'll do our best to retrieve it.

DMP You guys, I know where it is. It's in ...

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CC-H Okay, fine. We'd appreciate it if you can find it. And, also, if we could get the battery readouts for BAT C and PYROs of BAT B and C, we'd appreciate it.

ACDR Okay, stand by.

ACDR Dick, what's our position right now?

03 43 15 CC-H You're on an ascending pass and you're just - looking at our big 10 by 20, looks like you're just about very shortly going to be crossing over Thailand, North Vietnam, and China. You're going to cross the Korean peninsula here in a few minutes and then top out up there by the Aleutians.

ACDR Okay, we just got some - some good - Deke just got some good targets of opportunity for Farouk there.

CC-H Roger.

ACDR Okay, go ahead. What did you have next, Dick?

03 43 56 CC-H Okay, we're ready to - we have data. We're ready to go ahead and shut down the secondary coolant loop evaporator and, also, we want to shut down that loop and get the pump off and we'll be watching you do that.

ACDR Okay. Vance has got that in work right now.

03 44 13 CC-H EVAPORATOR - Yeah, yeah. EVAPORATOR OFF first and then the PUMP.

ACDR Roger.

03 44 22 DMP Dick, you wanted batteries. BAT C is 37, PYROs A is 37, B is 369.

CC-H Okay, Deke; thanks a lot. A couple of other clean-up items. Down in the LEB, we'd like to ZERO the OPTICS and get the G/N POWER OPTICS to OFF. And, also, again we're standing by for the VERB 74.

03 44 48 ACDR You got the VERB 74.

CC-H Okay, great.

03 47 01 CC-H And, Apollo, Houston. One more thing. We're ready to close the waste stowage vent valve. As I said before, do not stow the cabin vent QD as it says in the Flight Plan.

ACDR Don't stow it. You mean - in other words, leave it - leave cabin vent to open or shut it, in other words. Put the - take the QD off or on. Sorry, Dick, I didn't understand you.

03 47 28 CC-H Well, what I was referring to, Tom, in the - there in the Flight Plan, the DP's column, it says, "Remove cabin vent QD and stow in the right-hand equipment bay, TSB." We don't want you stow it away because we are - we do expect to be using it tomorrow, but we are ready to close the waste stowage vent value.

ACDR Oh, okay.

ACDR Okay, Houston. Just to reverify here, you don't want any urine dump tonight. Affirmative?

CC-H Let me check on that, Tom. Stand by 1.

03 49 04 CC-H Tom, Houston. Once we get the covers open, we would appreciate no urine dumps; however, you can go ahead and do urine dumps now, and then just wait 15 minutes to do the - the ops per the Flight Plan there.

ACDR In work.

CC-H Roger. And let's see. I think we've seen just about everything on data except we - except for the optics zero, and get that off. And a reminder. After you chlorinate the water in the - in the postsleep - in the presleep checklist, we'd like you to wait a little while and then close the potable tank inlet.

03 49 48 ACDR You got it.

03 52 59 CC-H Apollo, Houston. You're looking real good. We're 2 minutes to ATS LOS. We have one more pass tonight, it's a short one at Goldstone at 183 plus 52. I'll see you there.

ACDR Okay, good. And they got the word to wake us up in the morning at 30 minutes early. Pass that on. I guess Bo will be on then, right?

CC-H That's right. Bo will here - be here shortly and I'll be sure and pass it on. Incidentally, Tom, on that - the pass we're planning on trying to wake you up is a real short one there at Santiago, and it doesn't have a VHF backup. But even if we miss that, the next pass is only about 10 minutes down the line. So at any ra - at the worst, it'll be 20 to 30 minutes early.

ACDR Sounds good.

03 53 40 CC-H Okay, fine. And I'll give you a call at Goldstone.

04 14 48 CC-H Apollo, Houston. Goldstone for 2 minutes.

CMP Hello, Dick. How you doing?

CC-H Real fine down here.

ACDR Okay. We're just working away a little bit here - listening to you on the squawk box.

CC-H Roger.

CC-H Apollo, Houston. We're at 30 seconds from LOS. We'll see you in the morning. We'll wake you up early, and we do not see that the SIM bays are activated yet. Just be sure and don't forget to activate them and use detector 1 on the EUV.

CMP Okay. Understand. We're still venting.

04 16 35 CC-H Okay. Understand. So we'll see y'all in the morning.

END OF TAPE

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TAG Tape 204-04/T-99
Time: 204:04:30 to 204:05:37
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

REST PERIOD - NO COMMUNICATIONS

Day 204

TAG Tape 204-05/T-100
Time: 204:10:16 to 204:11:45
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

10 48 46 CC-H Apollo, Houston. Good morning.

CC-H Apollo, Houston. Good morning through Santiago for about 1 minute more.

ACDR Good morning, Bo. How are you?

CC-H Good morning. We'll see you again at Ascension at - -

ACDR ...

CC-H We'll see you again at Ascension at 190:40, which is about 12 minutes from now.

10 49 33 ACDR All right. Real good. Thank you, Bo.

11 02 55 CC-H Apollo, Houston through Ascension for about a minute and a half.

ACDR Hello, Bo. How - how do you read?

CC-H Good morning. I can read you. You're a little difficult over the squawk box. If you will maneuver to the attitude called out in the Flight Plan at 191:10, we should be able to get ATS when you dial in 18 and yaw 268.

ACDR Okay; and - -

CC-H Apollo, Houston. We're showing that you're fairly close to gimbal lock.

CMP That's right.. ...

11 04 11 CC-H And, Apollo, we're a little less than 1 minute until LOS at Ascension. We'll see you at ATS when you dial up 18 and 268.

ACDR Bo, did we shut down the SIM bay? Over.

CC-H Apollo, Houston. We did not read your transmission.

ACDR I asked, "Did we shut down the SIM bay?" Over.

CC-H Negative. The SIM bay is still open.

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ACDR Roger. Should we shut it - should we leave it open or shut it down? Over.

11 05 15 CC-H Leave it open, and close it as called out in the Flight Plan.

11 07 38 CC-H Apollo, Houston through ATS. How do you read?

ACDR Hello, Houston. I'm reading you loud and clear, Bo.

CC-H Roger, sir. As usual, unfortunately, I have a couple of Flight Plan changes.

ACDR Really?

CC-H Surprisingly, yes.

ACDR Okay. I'll get a pencil and copy them down. Just a minute.

CC-H Okay.

ACDR Okay, Bo. Go ahead.

CC-H Okay. The first one is at your option, you can activate the secondary evaporator, but we'd appreciate it if you'd do this while we have acquisition.

CC-H And - -

ACDR How about right now?

CC-H That's fine. That's on S/1-18, and you're clear. We're watching.

ACDR Okay. But in the System Check - I mean, the Flight Plan, I don't see anything about closing SIM bay doors in that. Are we going to shut those bears?

CC-H No. We can now boil water even - even though the SIM bay door's open.

ACDR I got you. Okay.

ACDR Okay. SECONDARY is ON.

CC-H For your information, we're just getting supplemental data, so they'll tolerate the water boiling even while they're collecting data at this time.

ACDR Also, we can take a few presents from Myrtle, too. Over.

CC-H Apollo, Houston. You're clear to dump through Myrtle, too. Too.

11 11 06 ACDR All right.

11 22 26 CC-H Apollo, Houston. We still have a couple more Flight Plan changes when somebody gets a chance.

11 34 12 CMP Houston, Apollo.

CC-H Hello, Vance. Good morning.

CMP Hey, good morning, Crip. How are you?

CC-H Very good.

CMP I was just wondering - -

CC-H And you guys?

CMP Oh, we're shuffling around, doing just fine. Wondering if it would be wise to make a quick TV check here just to make sure we've got all the switches right and everything's coming down good.

CC-H We think that'd be an outstanding idea. We're set up down here that we can take a look at it. We're not going to be able to look at it here, but the site is going to be able to take a look at it and verify it. One item - one item of recommendation we'd have would be to - to put the shades on.

CMP Even though we're in the LEB, huh?

CC-H That's affirmative. Apparently, from some of the stuff we've seen back in the joint phase, the Sun does apparently shaft down and interfere with it, and if it wouldn't be too much trouble, we'd appreciate it.

CMP Okay; we can do that. Why don't we turn it on first though anyway, just to - because we only have about 10 minutes of ATS here, don't we?

CC-H That's affirm. Well, it's actually about 6 minutes. We can also look at it at Guam, too, which we're going to come across, and we've got about 6 minutes there.

CMP Okay. Well, we'll put the shades on then. Stand by. We'll see if we can get it on now and put the shades on at the same time.

11 39 20 CC-H Apollo, Houston. We're a couple of minutes from LOS here through the ATS, and we're going to have you again at Guam in about 3 minutes. The - we're receiving word from the site that the TV looks - looks good. I guess - I'm not sure whether you got the shades installed or not, but we do want to make sure that they're installed so that we know we've got a - got a stable environment. But everything else is looking good, and we'll have a few minutes before the press conference actually starts there to make sure our comm is squared away and the TV's looking good. If you've had a chance to read your monitor, you might take a look at it yourself and see how it looks. One other item is that any time you guys get a chance, you might go ahead and take the WASTE STOWAGE VENT valve to VENT, and that will let us go ahead and start a cabin purge.

11 40 08 CMP Okay; to VENT. Crip, why do you need a cabin purge?

CC-H Let me get a direct clarification for you. The - Okay; the reason is that we have scheduled a DM O₂ purge, and I guess we didn't call that to you, but we do not want to do that because of - we've used up most of the O₂ in the DM, and we're just going to go ahead and purge it using the WASTE STOWAGE VENT valve.

CMP Okay. And we have the shades on. I noticed there are a few bright spots in the LEB, but we'll get a better chance to look at those when we get through working here.

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TAG Tape 204-05/T-100
Page 5

CC-H Okay; fine.

11 42 53 CC-H Apollo, Houston. We're AOS at Guam, 5 minutes.

CMP Okay, Crip.

ACDR Good morning, Crip. How are you?

CC-H Morning, Tom. Feeling great. How are you guys up there?

ACDR Well, 9 days of superclean living and - -

CC-H Your comm's cutting out on you there. I didn't get all of that.

ACDR I said, "9 days of good, clean living and " - -

CC-H All I got was the "good, clean living," which we all need to participate in a little bit, but your comm was cutting in and out.

ACDR Roger. How do you read now?

11 44 05 CC-H I'm reading that good.

ACDR Okay - -

CC-H There you went again. We're dropping in and out of the site, I've been told, if you're reading.

CMP All right.

11 44 30 CC-H Tom, I understand - your downlink apparently is breaking in and out at the site, but I understand my uplink is okay. For your information, the way we're going to handle this upcoming press conference is that when we initially acquire you on the ATS, we're going to take about 5 or 6 minutes there to make sure we got everything set up and give you a comm check with each of you guys, and then we'll be turning it over to the press, which is going to be assembled over in the auditorium in building 2. And they will be directing questions at each of you individually. And they - we have slipped the thing down so that we have that initial time to set it up, and when we

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finish with - I believe what they got there is something like a half hour - I'll go ahead and take it back. And I'll be available to you any time in between there if you need to talk at me.

END OF TAPE

Day 204

TAG Tape 204-06/T-101
Time: 204:11:45 to 204:13:00
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

11 45 17 ACDR Sounds good, Crip. Thank you.

CC-H Okay; we're going to lose you in 1 minute, and we'll see you again. Even though it's not called for in your Flight Plan, we'll see you at Vanguard in about 9 minutes from now. The reason for that, of course, as I told you the other day, she's underway and going toward Sydney.

ACDR Okay. A little bonus communication with you here.

11 47 44 CC-H Rog. And a little liberty for the guys out at Vanguard.

11 57 38 CC-H Apollo, Houston. We are AOS Vanguard. Have you for 6 minutes.

CMP Okay. We're here.

CC-H Didn't think you'd run away. At least, I hoped you hadn't.

CMP ...

CC-H I couldn't copy that. You were kind of - kind of whispering at me there.

DMP Still flying in orbit.

CC-H Still flying in orbit. Very good.

CC-H Getting close, though, you guys. About all the fun's about to come to an end here tomorrow.

CMP That's right.

CC-H Hey, while I'm standing by here - I don't know whether you got a report or not, but that last pad you guys ran for that special target, we ended up getting 10 good minutes of X-ray data out of that thing, where, you know, we weren't switching it on and off. It worked great and came out real fine. Appreciate all the work you guys did. The PIs are real enthusiastic about it.

ACDR Well, I guess that's good. And you tell them hello. And I hope that all the data comes out and they get some good discoveries.

CC-H Rog. Well, they - they're looking forward to it now - to going ahead and sitting down and going through all this data. But, tentatively, it looks very good.

12 02 23 CC-H Apollo, Houston. We are 1 minute from LOS. And our next station contact will be Santiago in 17 minutes.

CC-H That's about 57 after the hour.

12 19 03 ACDR Hello, Houston, Apollo from Santiago. How do you read?

CC-H Loud and clear, Tom. We're with you for about 5 minutes here.

ACDR Okay. You've got S-band down at Santiago?

CC-H That's affirm. S-band only. No VHF.

ACDR Okay. Well, I think we've got this spacecraft all stowed and cleaned up in a hurry here. Looks like a big, roomy spacecraft compared to what it's been looking like for the last 9 days.

CC-H Well, that's good to hear you guys got up and did a little housekeeping this morning. I assume that's why you wanted to get up a little bit early. Before we get started in the press conference, I might - would like to go ahead and get that WASTE STOWAGE VENT valve, CLOSED, and that way we'll avoid any C&Ws from a high O₂ flow, we hope, during the thing. We'll probably be asking you to open it up again after the conference because we haven't completed the purge.

CMP Okay.

ACDR Okay. You're just going to keep that open, and that's what you're going to call the purge in for a while. Right?

CC-H That's affirm. We're - we're purging by just opening that vent up. That - that allows us to purge through the CM REGs. One item I might mention here, Tom. I

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Page 3

think you guys said hello to the people in Quito the other day. We're now passing over Santiago, of course, and this is the first manned mission that these guys have supported, and they're standing down there listening if you guys might want to say hello to them this morning.

12 20 28 ACDR

Sure; glad to. Deke's up in the docking module. In fact, he said he visited, but we would like to say hello to all the good people in Chile and thank you so very much for all your support and help on the mission.

CMP

You have a beautiful country down there. Especially - We can see your Andes very well; just white, very rugged, beautiful from this altitude.

DMP

Good morning down there, guys. I wish I was back there with you one of these days after seeing all the good work you're doing for us. Really enjoyed the one time I spent with you and hope to get back again some day.

12 21 02 ACDR

It really is a beautiful view to come across the Pacific and see your country move into the Andes and on over. We've taken a whole lot of pictures and - of your country - and we hope that we can have some to show you, and maybe visit there someday.

DMP

Give the mayor and the fire department my regards.

CC-H

Sounds to me like you're trying to work up another trip there, Deke and Tom.

ACDR

Very smart, old buddy.

CC-H

Why not, why not. I'm sure those guys appreciate hearing from you, but it looks like you're just now coming across the - across the coast. Sounds like a beautiful view.

ACDR

Yeah, it is.

ACDR

We also hope that we've gotten a lot of pictures there for the people of Chile to help them on their resources and fishing.

CC-H

Very good.

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12 26 00 CC-H Apollo, Houston. How do you read through the ATS?

ACDR Roger. Read you loud and clear through the ATS.
How us?

CC-H Okay. We - pretty good. We've got a little static in the background here we'll try - try to clear up. And we dropped out there due to the anomaly change, apparently. And we've got a good TV picture coming in here now. Let's take a look at it. And why don't you - if you can, I'd like to just get a short count out of each of you, if you can, when you get into position.

ACDR Roger. 1, 2, 3, 4, 5.

CMP 1, 2, 3, 4, 5.

DMP 1, 2, 3, 4, 5.

CC-H Okay; all three of those came in - came in good. And let us work on the TV picture here just a little bit.

CC-H Deke, you look awful pretty there upside down to us, but it's disorienting everybody here on the ground. Could we - could we talk you into turning over? Is there - is there enough room for you get straight that way?

12 27 25 DMP Well, we'll try it. I'm not sure.

CC-H Going to give all of us vertigo.

CC-H You guys look all cleaned up and spiffy. Could - wouldn't have believed you've been up there for 9 days.

ACDR Well, we're bright-eyed and bushy-tailed this morning, Crip. Ready to go.

CC-H Very good.

ACDR Cleaned the house, and everybody had a shave and what all.

CC-H Rog. Twinkle toes there.

CC-H Kind of hard to squeeze in there.

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TAG Tape 204-06/T-101
Page 5

DMP Yeah, I'm competing with the hatch cover here.

CC-H Understand.

CC-H No room for your feet.

12 29 23 CC-H Okay, Vance. The - the only - only thing is when -
Over in your corner there, it's - the light kind of -
there's not very much on your face. I don't know,
it's like - Yeah, that's great right there, if you
can do that. That's beautiful. Well, if - if you
guys are all ready?

ACDR We're ready.

12 30 24 CC-H Okay. You guys look like you're all set up and - and
ready, and I'm going to go ahead and turn it over to
the gents over in building 2. It's over to the press.

ACDR Sounds good. See you later, Crip.

MCC-H We're ready to begin now. Questions, please. Howard
Benedict, AP.

PRESS First, congratulations to all of you on a super mission.
And my question is for Commander Stafford. When you
splash down tomorrow, it will mark the end of an era
in the U.S. manned space program. You, Tom, have
been a part of that program for many years. How do
you personally feel? Do you have any regrets about the
closing of this chapter in space exploration?

ACDR Well, first, good morning, Howard. I think it's
great of you guys to get up this early in the morning
to say - to come up here and ask questions. (Laughter)
Yeah, it's been a - To me, it's been a great number
of years here; I enjoyed every bit of it. Certainly
there's a lot of nostalgia in seeing Apollo - the
end of Apollo; however, I think we are opening a new
era, with respect to the Shuttle, where space can have
more utility, bring more benefits to man. It's going
to be a quiet program for a couple of years, but down
the road, I - things are going to be great too, except
it's just going to be a couple of years without some
manned space flights. Over.

MCC-H Bruce Hicks, UPI.

12 31 44 PRESS Vance Brand. This was your first flight, but you've said very little about your personal feelings. Could you now describe those personal feelings of the mission?

CMP Well, it's - in a nut shell, the greatest experience I ever had. It's just been super. Things up here are - are really thrilling. It started with the launch. I'll never forget that. And seeing the Earth - seeing the Earth from up here at this altitude, just a fantastic thing. The experiences of zero-g and, of course, the prime things in the mission have all been a lot of fun, and - but that includes docking, getting together with the Russians for 2 days, and everything else we've been doing ever since. It's just been super.

MCC-H Jules Bergman, ABC.

PRESS For Tom Stafford. Tom, do you feel the mission was worth the 225-million-dollar cost? And if so, if the NASA budget allowed, would another such joint mission with existing hardware be worth the cost?

12 32 53 ACDR Good morning, Jules. Well, I think we actually - keeping under our budget by about 20 million dollars, so I think it was about 230. The - Was the mission worth the cost? Yes. I think definitely so. It did put together a new mechanism for both the countries, and they both contributed equally to it as far as rendezvous for rescue. And the main item it can show that, in spite of great political differences, that if people meet commitments, that a lot of effort can be achieved. So I would say, yes, it was certainly worth the effort on both sides. And as far as Glynn Lunney and a lot of us can see, it cost them as much or more than it did us, as far as actual funds. As far as another mission, I think we'll have to review how - all the impacts of this one, and just look at that in the future, Jules. Over.

MCC-H Shepard, NBC.

12 33 47 PRESS This question is for Slayton from the pilot of MR3. Now that you've had a chance actually to fly in the spacecraft after 16 years of waiting on the ground, was it really worth it? And tell me, how does it feel to fly without rudder pedals?

DMP Really didn't, Al, I had them there. Now to answer your question, it feels great. The only thing that upsets me is having to miss all this fun for the last 16 years. You've known for that long how much fun it was, and all I've done is sit back and listen to you guys talk about it. Never believed it was quite as great as it really is. I don't think there's any way you can really express it, Al, as you well know. I think Vance covered it pretty well. Everything from the lift-off up to this point has just been super. And we know we have to come back tomorrow, and I'm not sure I'm looking forward to it.

MCC-H Nelson Benton, CBS.

PRESS This is for General Stafford. Tom, did the time taken for the ceremonial parts for docked activity - had that time been spent otherwise, would more have been accomplished during the docked phase of the flight?

12 34 57 ACDR If the ceremonial time had been - other things - well, actually, we concluded five joint experiments with the Soviet crew and tested out the docking mechanism and modes and also the other efforts. The ceremonial time I think amounted just to a very, very small segment of time. And, as you know, we got a lot of scientific data here in the solo flight. We got a lot while we were there with them in a dual flight. So, I think the time allocation was pretty good.

MCC-H Nick Chriss, LA Times.

PRESS Commander Stafford, you've had a very compressed time line. I wonder if you could describe for us briefly, perhaps the crew's most difficult moments thus far on this flight.

ACDR Well, as far as difficult moment, I don't know. We've had some - we've had some trying moments, in the way we've taken the Apollo spacecraft and all this extra scientific apparatus onboard, and then try to make it into a little bit of an effort of a minor TV studio, so we could show the world what it was like in space when the Russian crew was over here. I think really one of the - I heard Vance

and Deke comment on too - was to get this little bitty spacecraft stowed away with all this gear onboard so it looked halfway decent. I mean, it was, as you say, a real bundle of snakes here. Deke?

12 36 20 DMP

Yeah, I think probably the - there's no one thing that was any great difficulty. The one overall thing that is the perpetual problem, as Tom said, is the housekeeping problems. And that's again the thing we've heard about from everybody that's ever flown, but, again, you can't appreciate it until you're here. And everything that you drop floats off somewhere, and you got to chase it. Then it seems to find the most hidden cranny to deposit itself in. And meals, which are a really mundane thing on Earth with the same equipment up here, just take about three times as long to prepare, eat, and dispose of. Other than that, it's been super.

CMP

Plus we need a traffic cop up here to direct who's going to go through which way, when. It seems like we're always bumping into each other and trying to get into the same locker, and it's really a pretty small volume up here. So that - that all works together to sometimes give minor frustration.

ACDR

And we've had some long 16-hour days, one after another. Maybe 16 plus quite a few hours, but everything is going off great, and we feel in good shape. But I'm - Working around in this little place with all this gear on has really been a bear.

DMP

I think the flight planners did a super job to get this thing laid out as well as they did. There's really no way you can do any better, except to just get up here and work it out in real time.

12 37 44 MCC-H

John Wilford, New York Times.

PRESS

For Vance Brand. For the last couple of days, you've been busy with scientific experiments. Could you tell us, are you up to date on everything? Are you behind on some of the experiments? Just what is the status of your experiments?

CMP

Well, we've been going right down the Flight Plan. And we have most of them out of the way. Still remaining, of course, is the Doppler experiment,

which - mainly the work today. It involves kicking off the docking module this afternoon, sometime around 2:30, Houston time, I believe, and, after that, performing two engine burns to get spacing on the docking module. And after that, we will be measuring relative velocity between the docking module and our vehicle to, basically, get a better feel for the minor gravity fields around the Earth and find out where the big heavy land masses are - where the heavy things are that are equivalent to mascons on the Moon. So, that's the main thing. After that, it's medical tests back on the ground.

12 39 04 MCC-H Albert Bobikov, Tass.

PRESS (For some sakes, I'll repeat it. All of us saw a good job together with the Soyuz cosmonauts in space. How did the preparation between the two countries - between the specialists here in the U.S. and the U.S.S.R. help you in joint - in joint preparations in space?)

ACDR (We have had more of it on the Earth. Yes, I think we had 2 nice years. We started working together - engineers, cosmonauts, engineers, and technicians; everything went so very well, though sometimes it was very difficult.)

DMP (Yes, I think that the cooperation in space is the best cooperation in the world.)

ACDR (Roger. We worked with the cosmonauts and we performed five joint experiments and now we have become good friends. I think that our cooperation is very good. We have had an excellent relationship and a good experience.)

CMP (Most important, we accomplished the docking. The docking was successful, and the rendezvous was successful. We have worked together 2 days. This was also successful.)

MCC-H We'll get a transcript of that in English. Next, Mary Bobb, Reuters.

12 41 35 PRESS All of you three have done an absolutely super job. For Tom: How does this compare with your other missions? For Deke: Is it tougher or easier than

you thought? And for Vance: Will you have any words of wisdom to the pilots of the Shuttle?

ACDR

Good morning, Mary. What kind of a hat are you wearing this morning? Well, compared to our other three missions, this one was completely different, in one sense, you know, working for the period of time. And that's a lot of the fun of a mission is working on it before you fly with the Soviets. The rendezvous was somewhat similar, but the actual docking, the new mechanism, was different. The transfer back and forth was different, and all that, and the training. So, it was one heck of a lot of fun, and there's a lot of trying efforts, but a lot of fun. And it was a different type of mission in a way. Yes. Deke.

DMP

Well, Mary, to answer your question about how tough or easy it was from a physical point of view, I haven't done anything my 91-year-old aunt up in Wisconsin couldn't have done equally well. I think as far as the flight's concerned, it was probably easier than the training, mostly because we had a very nominal flight. The spacecraft hardware's all performed superbly; we had absolutely no problems of consequence. And we never run a simulation, of course, without having a barrel of problems, so it's been a very easy flight, all in all, and a very enjoyable one.

12 43 08 CMP

And I believe your question, Mary, to me was what would I - what words would I say to the Shuttle pilots coming up as a result of my experience on this flight. Well, I would say when you - I would direct my comment mainly in the area of spacecraft design, because right now they are designing a spacecraft and having it built. They're near the design phase, but I think that this vehicle has given us so much confidence just because it purrs right along, and it seems to be a vehicle that we can - we can fly. Actually, it's - it's like riding a bicycle. We can fly this thing like you ride a bicycle; the man is part of the machine. And I hope that the pilots of Shuttle will do all they can to make the Shuttle the same sort of a vehicle - that is, one that uses the best of machinery and the best of man, puts them together to come up with a vehicle that they can have a lot of confidence in, just like we have confidence in this one.

MCC-H Peter Reich, Chicago Tribune.

PRESS Good morning, gentlemen. General Stafford. 15 years ago, no man had been in space. Now 12 Americans have walked on the Moon, and a Russian and American spaceship have linked up in orbit. What will the next 15 years hold, sir?

12 44 37 ACDR Well, we're predicting, and I think everybody that - has been, worked in the business, like Deke and Vance and I have - that space is going to become more and more a medium to work - and it can benefit the people on Earth. It won't be like an airline - probably ever, for a long time to come. But we hope, with the future technology we're developing now, that a lot of great things can be accomplished. It'll cost us far less per pound to go into space - that we can bring back some great benefits, as far as Earth resources, manufacturing, and all those types of data. So after, say, a quiet period - for say, 4 to 5 years - then you're going to see space become a more and more - a somewhat routine-type operation. Where we'll be at the end of 15 years, would be very difficult to say, though.

MCC-H Lydia Dotto, Toronto Globe.

PRESS Question for Commander Stafford. I would like you to comment on how well you thought you handled Russian during the mission, and whether you think this would be a practical way of doing things in the future, or whether you think there will eventually be a single official language used in space, as it is in aviation - when people from various countries around the world start flying.

12 45 53 ACDR Well, I guess - I think, the whole crew handled the Russian language very well during the mission. I know, at least, all our commands were understood. And I think that the Soviets did a good job with English. And a couple of times, things would come from the Control Center that - relay over. We'd tell them - what - that their Control Center wanted to talk to them, and instantly, they'd take care of it. So, everything went off beautiful. And I think all our thoughts that we wanted to get over to them were conveyed. As far as a universal language, and this has been kicked around for a while, but I can't see it on the horizon. I don't know, Deke, or Vance?

DMP Well, there's been discussion over the years about Esperanto. In fact, it came up here recently in this mission. But I think, if you're talking about a multinational program, where you have a number of languages involved, probably something like that would be desirable. I think, however, for a mission like we just - are in the process of completing, where there are only two countries and two languages, this is probably the way to go. Although, I have to admit, we surely spent a lot of man-hours on language training. Probably at least a third of our total training was on language. I can understand it.

MMC-H Al Slagle, New York Daily News.

12 47 08 PRESS Stafford, what do you consider the single most important accomplishment, for both countries, of this mission?

ACDR Well, I guess the single most important accomplishment is the fact that - it shows that the people of both countries - that we've worked together on a very difficult and a tedious task over a prolonged period of time; that we've ac - successfully accomplished this task; that if the same dedication, the same commitment, to meet outlined goals and commitments, is carried forth - there's probably considerable other efforts that can be carried forward, that can benefit a lot of people. But both the commitment and the actual deeds have to be there. But that, to me, is probably as significant as - even more significant that actually proving out the new docking mechanism.

12 48 02 MCC-H Reg Turnill, BBC.

PRESS Oh - for Deke Slayton. After 16 years experience of American doctors, Deke, did you find it reassuring to have a Royal Air Force doctor in Mission Control?

DMP Yes, sir. He's a very fine doctor, too. We appreciated all the support we've gotten from your folks.

MCC-H Craig Covalt.

CMP He's only been with us for a short time, but we sure think he's a great guy.

MCC-H Craig Covalt, Av[iation] Week.

12 48 37 PRESS For Tom Stafford. From a piloting standpoint, the crew has done some very precise flying in the last few days, on the dockings and, especially, with Deke's UVA maneuvers. As pilots, how difficult has this mission been to fly, with Apollo's maneuvering capability, compared to how difficult y'all thought it'd be, prior to lift-off?

ACDR Well, the - We had some great simulations, Craig. But we found that - actual flying it - it was actually, in some ways - the handling characteristics of the vehicle - was a little bit better than the simulator, because of the - some of the visual presentations. You do - you do have a lot more cues in orbit like, the night time - the way the stars move, even. You know we had that in the simulator, but - the night horizon and all that. So, I thought the actual flying task itself was a little easier in flight than what we experienced in simulation. Needless to say, all three of us have a test pilot background, flight test experience, and it's always great fun to fly. Deke?

DMP Yeah. I think Tom said it on the head. Our simulator visuals have never been the greatest. It's almost impossible to make them good, you know, perfect. And, so your visual cues are great, however comparatively. And, of course, the vehicle dynamics are always pure, which they are not always in the simulation. So I think, generally, it is easier and straightforward, and never any doubt at all about where you're going and what you're doing. We got into a couple of problems on the UVA with switch configurations trying to get cranked up to go. But other than that, everything was perfect in terms of the flying part of it. It was comparatively easy.

MCC-H Laszlo Dosa, USIA.

12 50 20 PRESS General Stafford, has this mission improved the chances for a future international manned flight to Mars?

ACDR Well, that's a difficult question. I'll say definitely that it has. But the - the main thing, as far as any future flight to a distant planet like

that - that's going to - The big problem there is funding. We know how to do it, as far as going to Mars and what we developed on the Apollo. Our country certainly has the techniques. As far as - I would think that probably either - any flight like that would probably be of an international nature. The one thing we have - like onboard the Apollo spacecraft, just besides, you know, the joint mission of docking with the Soviets, we have two German biomedical experiments, and over the past period of time we've we've always cooperated with other countries as far as helping them take their payloads into space, and it's going to be bigger in the future.

MCC-H Jacques Tiziott.

12 51 23 PRESS This is a question for Vance, since - since he has spent 2 years in Europe. Vance, how do you foresee a form of space cooperation between the United States, the Soviet Union, and Western Europe?

CMP Jacques, you say, have I thought of that particular thought? Or idea? I'm not sure I got the question completely.

MCC-H Jacques, would you repeat the question, please?

PRESS Vance, how do you foresee some form of space cooperation that would involve the Soviet Union, the United States, and Western Europe?

12 52 07 CMP Well, I would guess that, that's certainly a possibility but I'm not in a very good position to think that one out. It's - I think it's desirable that the - the whole world tends toward cooperation in space, really. And I guess we've had the first step here with the U.S. and the Soviet Union.

MCC-H Harry Pease, Milwaukee Journal.

PRESS Cris Kraft - this is for Deke. Cris Kraft is quoted today as saying that you'll be offered an opportunity to direct the horizontal test of the Shuttle, and that you'll be considered as a pilot for it. What's your reaction to that?

12 52 51 DMP Good morning, Harry. How are you doing? We saw Milwaukee for you yesterday. Yeah, to answer to

your question - I'm looking forward to working on the Shuttle, or anything else that NASA management wants me to do. And, of course, that's the next program. I look forward to it as being a challenge, and I like to fly anything and everything. And if - if I get a chance to fly that beauty, I'll certainly be happy.

MCC-H The gentleman here.

PRESS Roger Norum with the United Press International Audio Network. A question to Vance Brand. You've been in space more than a week now. Would you encourage the idea of having women astronauts on future long space trips? Is so, why? If not, why?

12 53 40 CMP We were laughing because I think we've heard the question before. Well, I'll try to give a fresh viewpoint on it. I certainly think that in the years to come that we'll have women in space. It should - it should work great, as long as everything is designed properly to have women in space. By that, I mean, this particular cabin with a mixed crew wouldn't work; it's too small and it doesn't have the proper facilities, or even any kind of separation. But - I think - the first good chance for women in space would be in the Shuttle area - era. And probably in the - in the experiments area, but we'll have to wait and see what happens.

MCC-H Angus Macpherson.

PRESS General Stafford. Short of Mars, which everyone seems to agree is a long way off, do you have any specific thoughts on specific undertakings, which your two nations might get together on in space? And have you - did you discuss this at all with Colonel Leonov?

12 54 53 ACDR No. The main thing on - on this mission; we had to put all our efforts and our thoughts and everything just to concentrate on - on getting this one done perfectly, which I think has been pretty much accomplished. The future thoughts, we are having negotiations with the Soviet Union. Dr. Fletcher has been over there; George Low talking with the Academy of Science. As far as with other countries, our - as you know, the nine European countries are

building the ESRO Spacelab and that will fly in the Shuttle. And in that one - there will be a whole series of European "astronauts" that'll be flying in the Shuttle working on the lab and that should take place in the early 1980's. Over.

MCC-H Harriet Shelare.

12 55 46 PRESS For Deke Slayton. Last month in a press conference here in Houston, you made some remarks that were critical of the Soviet Government. Was there any reaction by the cosmonauts or discussion of these remarks during the flight?

DMP No. I don't know what else to say about that question. I didn't mean to give you a smart answer, but no, there's not been any discussion on the part of the cosmonauts. As a matter of fact, on the part of anybody else since I made those comments, other than the following day's press conferences.

MCC-H Gentleman in the first row.

PRESS Deke, have you seen Salyut?

DMP Negative.

MCC-H Gentleman back here in the blue sports jacket.

PRESS Can you tell me if any one of you, or all of you could answer this, plan to do any work for increased funding for NASA?

12 56 53 DMP Certainly. We've been doing that for about 15 years and I would expect to continue to doing that.

CC-H I believe there's - -

ACDR Well, we're not officially lobbyists, but I think basically all of us are - believe that the increase in science and technology is going to help all the people, so how you get - how you apply that actually takes fundings.

CMP You better believe we'll - I'll try to do my best. I believe in it.

MCC-H Everly Driscoll.

PRESS For Deke Slayton. We realize you haven't had much time for a philosophical reflection, so off the top of your head, what sight, sound, or feeling has made the most vivid impression on you during the mission?

12 57 44 DMP Good morning, Everly. Well, that's kind of difficult to answer. It's been a very complex situation. I guess to start with - with, the launch was super. I - I was expecting something a little different, I guess. It was just like a real fantastic super-powered airplane taking off into a big Immelmann. And of course, when we shot off into orbit, we didn't have much of a chance to look around, but that first view out the window was unbelievable. In fact, every time I look out the window it's kind of hard to believe; it's just - just fantastic scenery in every direction anytime we're in daylight. Flying around the Soyuz, of course, was also very interesting. And, to kind of philosophize about any of this, I guess we've been too busy to play the philosophical game yet. We may sit back and think, when we get on the ground, a little bit more.

MCC-H Vic McElheny, New York Times.

PRESS General Stafford. Is there anything unusual or tricky about getting rid of the docking module this afternoon; anything that's bothering you about it?

12 58 49 ACDR Well, no, we're not anticipating any problems. The crew - we have simulated in our simulator quite a few times and that's - we'll use an explosive device after we've had a rate going like this to spin it off. If that doesn't work, we also have a backup mechanism, using the probe and drogue we can release it. But we're not anticipating any problems. It's a - it's a precise flying maneuver, but I don't think there'll be any problems with it. In fact, we were - I think all of us are going to hate to see the docking module go. It's been a real friend to us. It's - it's - we use it as a bedroom, a transfer tunnel, as an airlock, an exercise room, and a few other things.

CMP And a store room and an attic, right now.

ACDR We'll hate to see it go.

MCC-H Gentlemen, here.

PRESS Nigel Wade, with the London Telegraph. For Deke Slayton. If you do get to fly the Shuttle, would you be willing to take up a group of the press?

12 59 45 DMP Certainly, I'd be happy to. I think that'd be great to get all you folks up here. This - cause there's no way we can sit up here and tell you about it, or come back down there and tell you about it. And I think it'd be beautiful to bring you up here and show you.

MCC-H Now this may be the last question. Hans Meier.

END OF TAPE

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TAG Tape 204-07/T-102

Time: 204:13:00 to 204:14:30

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ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

13 00 03 PRESS Hans Meier from RIAS; West Berlin. Deke Slayton, you are right now a senior pilot in space. What can you say about the prospects, the future prospects, of elderly people in space, according to your personal experience right now, in space as pilots and as passengers. Would it be perhaps the same age limit as in aviation?

 DMP Well, yes. In my opinion, as far as flightcrews in space are concerned, I see no reason to use any different criteria to speak of than we use for commercial airline people. As long as people are technically qualified and can pass the physical, that should be the only criteria. I think as far as passengers are concerned, I see no reason why essentially anybody down there that wants to come to space can't come to space, especially in the Shuttle. The g-loadings are very low on both launch and re-entry. And - and I wasn't kidding when I said earlier that I thought my 91-year-old aunt in Wisconsin could come up and do this job physically. I believe - I really believe she can. And I believe anybody else down there can.

 MCC-H Final question, and a short one, please, Bergman, ABC.

 PRESS Tom, the Soyuz portion of the flight has come and gone. How do you feel now about the charges by a certain U.S. Senator that Soyuz was a deathtrap, that your flight had no scientific value, that the Russians couldn't control two spacecraft at once?

13 01 34 ACDR Well, remember we discussed that, Jules, in the press conference before, and having worked in detail with the - those people for 2 years, they certainly have a great capability. They're putting a lot of their resources into space exploration in the Soviet Union, and we'd been all through Soyuz, and also we'd ask them for a safety analysis. And they - They'd shown us their systems and all that and we actually had no problems. It sounded like, possibly that - no doubt,

Apollo-Soyuz was great headlines. Maybe somebody wanted to grab ahold of some action there, but the Soyuz looked solid as a rock just like we said it would be - like we inspected it at Baykonur, at the launch site. And it performed as they said it would. And as far as the - commanding control, they had absolutely no problems. So it's like you and I discussed earlier, Jules. Everything was right there and there was no problem.

13 02 27 MCC-H Tom, Deke, Vance, thank you very much. We'll look forward to seeing you at the postmission press conference. Thank you, ladies and gentlemen.

ACDR Real good.

DMP Thank you.

ACDR Thank all of you.

DMP (We'll see each other back on Earth.)

ACDR Maybe next time we can have it upstairs in space.

CC-H Hey, you guys did a great job there. Professional as always.

ACDR Thank you, Crip. And now, back to work ...

CC-H Rog.

ACDR Where were we?

CC-H Imagine it's time for a little breakfast.

ACDR And we'll get this thing reconfigured here.

13 02 59 CC-H Okay. We could also take that WASTE STOWAGE VENT valve back to VENT now and - and continue the venting. Incidentally, Mary was wearing an ASTP ballcap.

ACDR Oh, good. I knew Mary would have to be wearing some kind of a cap there, so tell her "Hi," again.

13 03 17 CMP Okay, Crip. And we performed the action of OVERBOARD DRAIN to DUMP.

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CC-H Okay.

DMP Hey, Crip, is there any reason I can't continue with this furnace? I meant to ask you over Santiago, but it's all ended out. And we'd just as soon get ahead on that one a little bit, if we can.

13 03 36 CC-H No. You - you - you're GO to go ahead and continue that. Incidentally, Deke, I mentioned earlier to Vance with that - in doing the vent valve open for me, it's - we're deleting your DM/CM O₂ purge that was scheduled later due to the quantity of O₂ that we got left in the DM.

DMP Okay.

CMP Okay, Crip. We're going to have to start moving some things around, so I'll turn off the TV about now and start packing up a little bit, if that's okay with you.

CC-H That's fine. We're all through with it. Appreciate all - -

CMP ... on, Deke. I'll get it right here.

CC-H - - appreciate all the efforts you guys got - went to to make that come off so well. It really looked good from down here.

ACDR ... - -

CMP It was a lot of fun.

ACDR - - thank you for helping coordinate the whole thing, Crip, and all the guys down on the ground.

13 04 51 CC-H Vance, awhile ago you said you were opening up the DUMP DRAIN valve and some - if that's the case, then you're still dumping urine. If - when you finish with that, we can have the WASTE STOWAGE VENT valve to open so we can tell you the cabin purge.

ACDR And, again, you said we are venting the DM/CM O₂ purge.

CMP Okay. Correct that.

CC-H We are not doing the CM/DM O₂ purge. That is - that is scrubbed.

ACDR Roger.

DMP Hey, Crip, could you check our furnace samples? I'm not sure we went through all of these. Seems to me like we've missed one. We've got 044 in there now.

CC-H Okay. Guys, we're still on - we're on hot mike, apparently.

DMP Okay.

13 05 53 CC-H And for Vance's information, we're getting through all the furnace samples, we think, except the symbolic sample, which we don't have time to do.

CMP Okay, we'll pass that to Deke.

DMP I'm on the line here. I can hear you.

CC-H Okeydoke.

13 17 44 CC-H Apollo, Houston. We're about ready to lose you on the ATS and we have you again in, oh, a little over 7 minutes at Orroral. And it'd probably be easier just to go ahead and pick up the - the morning report over the next ATS pass; that's the next long duration. We'll try to get it somewhere in there.

ACDR Okay.

13 18 06 CC-H Before I'm going over the hill, let me tell you some - some great news. I was just informed that yesterday Alexey made General.

13 25 53 CC-H Apollo, Houston. With you through Orroral for 3 minutes.

ACDR You cut out - just as you went over the hill before. Would you repeat that last transmission?

CC-H Okay. I was just telling you, I don't - don't think that news had been passed up yet, that - just informed that yesterday Alexey made General.

ACDR Well, real good. You can tell him "Congratulations."

DMP Yeah, congratulate him for us.

CC-H Rog.

CMP Really glad to hear it. Guess everybody thought that might be a possibility.

CC-H Roger.

13 27 11 CC-H Been looking ahead here at the - the time line today. It - you guys may be trying to - to get ahead on a few things. So want to warn you about a couple of items. I was going to ask, Tom, for you to modify slightly how you were going to take the picture of the fish. In - in addition to what you normally take, we were going to ask that the portable light be placed off about 45 degrees from - on either side, to get some pictures like that to see if the - if the fish try to reorient to follow the light a little bit. We can talk about that a little bit further when you do it. Also, we're going to make a stowage modification to bring back a couple of the LiOH canisters that were installed at the time that you guys - with that funny odor up there - just before the initial docking. And I can get that to you a little bit later. Just wanted to tell you, in case you were trying to get ahead of me, there.

ACDR Okay.

DMP You might pass on to the Granola experts down there that they taste as good up here as they do down there.

CC-H Couldn't copy that, Deke. What tastes as good?

DMP Granolies.

CC-H Granolies! Very good. We're about a minute from LOS and next station contact will be through Quito in 28 minutes. See you there.

Day 204

ACDR Okay.

13 28 54 CC-H Have a long rest period for both of us to get
 some breakfast.

13 57 31 CC-H Apollo, Houston. We're AOS at Quito for a minute
 and a half.

CMP Okay, Crip. Got you loud and clear.

CC-H Okay. I'm informed that I should call it "Key-to"
 and not "Kwe-to," as I've been doing.

CMP Okay. Hey, and just wanted to make one comment
 before I forgot. You might tell the food people
 that these food trays really are neat. They really
 are just the thing we need up here to keep our
 meals on. They're designed very well.

CC-H Well, that's a good comment. I'm sure they'd - be
 good to hear it. Where y'all are, sort of putting
 them up on the main display console?

CMP That's right. Uh-huh.

13 58 13 CC-H Great. Incidentally, we had a waste water dump
 scheduled for Tom upcoming here, and we want to
 delete that since we are running the secondary
 evap and using the water.

13 58 25 CMP Yeah, looked like we were down somewhere around
 60 now on our fluctuating gage.

CC-H Okay.

13 59 39 CC-H Okay, we're going over the hill here, and I'll
 pick you up on the ATS shortly.

14 05 06 CC-H Apollo, Houston. We're AOS through the ATS. Got
 you for 51 minutes.

CC-H Apollo, Houston. We're AOS through the ATS. Got
 you for about 50 minutes.

DMP Okay, Crip. Got you.

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CC-H Okay, Deke.

DMP Okay, did you have some special instructions for us on the fish? We missed it there, I guess.

14 06 09 CC-H No, all I wanted to do was to warn you that I did have some instructions. Basically, when Tom or whoever takes the - takes the pictures of them today, we would like to - in addition to the normal pictures we get, we would like to remove the portable light from the camera and hold it off at about a 45-degree angle on either side and get some photos that way to see if we can get the fish reorienting to the light.

ACDR Okay.

CC-H Okay.

ACDR You said you want *** on either side, huh?

CC-H Yes, sir, if we could. It's probably going to require two guys to do that, of course.

14 06 49 ACDR Yeah, Deke and I will. I don't know whether I ever told those guys down there or not, Crip, but all of those fish were orientating to the bottom of the package, what would be the colored side, I guess is the best way to explain it; there isn't any bottom.

CC-H Very good. I guess then they would be interested to know if moving the light over from an angle like that makes any difference to them.

ACDR I've been doing a lot of that. It doesn't seem to, but we'll get some pictures of it, anyway.

14 07 28 CC-H Okay. That'd be very interesting because I think, you know that that is one of the sensory mechanisms of the fish to - to reorient in that manner. Not being a - -

ACDR Copy.

CC-H - - being a - being a fish expert, of course.

ACDR I hate to admit it, but neither am I.

CC-H Oh, now, I know better than that. I've seen you bring too many in.

CC-H Apollo, Houston. When somebody gets a chance, if we could have ACCEPT, we'll go ahead and update your state vector.

14 09 21 ACDR Okay. You got it.

CC-H Coming at you.

CC-H Deke, wonder if this might be a good place to give this modification I was talking to you about on the LiOH cans, so you can get it noted down in your book and work it. We'll need the DM Checklist to do that.

DMP Okay. You need a DM Checklist. Stand by. I'll tell you if I could - I'll write it down in the Flight Plan here and then transfer it. How's that?

CC-H That's fine or we can hold up until you're working, as far as I'm concerned. It's no big deal.

DMP Okay.

14 11 55 CC-H Okay. The update's complete, and you guys can have the DSKY back and go back to BLOCK.

ACDR Okay.

CC-H Apollo, Houston. We see that we haven't powered down the experiments - SIM bay experiments yet. Like to go ahead and do this now, if we could.

ACDR Okay. Stand by, Crip. We're kind of milling around here between the DM ... everybody getting things sorted out.

CC-H Okay. We see them coming down. Appreciate it.

ACDR And do you want that X-ray purged at all?

CC-H Negative. We do not.

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14 13 11 CC-H What we're bringing them down for now is this fuel-cell purge, and you might note down there a little bit later, about 194:25, we ask you to bring them back up again. One little mod we're going to ask there - When we bring them back up, we're going to take the EUV on detector 1 vice 2. And I'll remind you of it there.

ACDR Okay.

ACDR Okay, Crip. I'm ready to copy on the Docking Module Checklist.

CC-H Okay. If you'll flip over to page 13-1.

ACDR Okay. We're there.

14 18 48 CC-H Okay. Just two items. Anywhere under that first part there when you first start, let me tell you what we're doing to do and you can note it however you want to. We've currently got LiOH cans number 15 and 16 in B-6. And we have number - cans number 5 and 6 in D-4. What we want to do is exchange those so that we end up coming back with 5 and 6 in B-6. And we throw away 15 and 16 in D-4 with the docking module. Is that clear?

ACDR Yeah, I think so. 15 and 16 are now in B-6. You want those transferred to D-4 and replace them with numbers 5 and number 6, which is currently in D-4.

CC-H That's affirm.

ACDR Okay.

CC-H Okay. And the other item is over in the right-hand column there, I guess, under the load jettison stowage bag and stuff that Vance is going to do. In the TSB in the right-hand equipment bay, it tells him to put the cabin vent QD. We're going to leave that on due to this extra venting that we're having to do and we're just - unless it gets in you guys' road, we're just going to leave it on for entry. No need to remove it, so we're not planning on throwing that away.

ACDR Okay.

14 20 13 CC-H Okay. That's really - really all I needed to modify. To understand - to help us understand what we're doing a little bit better on the purging, we would like to under - to know whether you're currently running with two suit hoses or one suit hose into the DM?

ACDR Just one.

CC-H Just one. Oh - okay, fine.

14 24 07 CC-H Apollo, Houston. Whenever somebody can get around to it, we're also standing by for the morning report down here.

DMP Okay. Stand by. We haven't quite gotten around to working that up yet.

CC-H Okay.

CC-H Talking about morning report and food and everything, Rita's down here in the - the MOCR today. I'm sure she appreciates all those good words about the food table.

ACDR Yeah. All in all, it's been mighty fine; and the few problems we've had has been just the zero-g problem, which is nothing new, and we don't have any magic solution to either.

CC-H Rog.

ACDR You can tell Rita that I bet we've all three gained weight on this one.

CC-H Okay. We'll blame it on her.

DMP I did get an orange too sour this morning; we had a bag ..., but that's the first time I've had that happen.

CC-H Well, did that - that match the strawberry you'd had earlier in the mission?

ACDR Yeah, that makes a beautiful view over the window here.

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CC-H Rog. Helps out the vis obs stuff, too.

ACDR Right. Like looking at the world through rose-colored glasses.

ACDR Okay, Crip. We've got Li[OH] canisters 5 and 6 in here in the B-6.

14 25 39 CC-H Okay. Real fine. Appreciate that, Tom. They're just interested in analyzing them to see if we can try to figure out what that odor was that you guys smelled a little bit earlier.

ACDR That's a good idea.

CC-H You mentioned the color or the hues on the window there; we're going to ask you to try a little bit more of the red tide when we come over it today. I was going to give you a update on that a little bit later; think we might be able to get some - get some photos of that area again.

ACDR Okay. They all look red today.

CC-H Understand.

14 26 23 ACDR Crip, looking ahead in the Flight Plan, have we got to close the overboard drain, the urine - these urine dumps and water dumps when we turn on the stuff again?

CC-H That's - that's affirm. The intent there is to turn the experiments back on when you finish the - the dumps.

14 26 52 CC-H If you started that urine dump about as - on time there - assuming it's going on, and it should be cleaned out pretty good by the time that we've got called out to start powering the experiments up.

END OF TAPE

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Time: 204:14:30 to 204:16:00
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ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

14 47 18 CC-H Apollo, Houston. We're getting down to about the time where you should be getting ready to turn on your SIM bay experiments, and we would like - on this time, instead of using detector 2 on the EUV, we would like to use detector 1.

ACDR Okay.

CMP Okay, Crip, how do you read?

CC-H Loud and clear, Vance.

14 47 46 CC-H And, Apollo, we've been sitting here considering - while we're sitting in tight deadband, and doesn't appear to be any real requirement to save us a little propellant; we recommend you go ahead and change your DAP to 5 degrees for deadband.

14 48 01 CMP Okay. Will do.

CMP Houston, Apollo.

CC-H Go ahead, Vance.

CMP Okay. I'm not in a position to see that light. What was it?

CC-H It was O₂ FLOW. It - it's still due to those - We were trying to find out if we could - -

CMP Okay.

CC-H - - if we could get a way to - around going ahead and getting this purge out without getting those - those FLOWS. And we're still looking at that. Hate - hate to put you all to the trouble for the C&Ws.

CMP Yeah. The only problem with that is, is when it goes so much, we tend to get careless, and it's like the guy that cried wolf too many times.

CC-H I sympathize with that, wholly. I - you know, as long as we've got you through the ATS here, I can certainly come up and tell you each time what it is, because we're looking at it, if you'd like that.

CMP Why don't you do it right during this period, because we *** the guys packing things, and stuff.

CC-H Sure. We'll do it. And we're assuming you're going to get the SIM bay stuff there pretty soon. Is that correct?

CMP I'm looking at it right now.

14 51 58 CC-H Rog. Okay. And also, whenever somebody gets a chance to work it up, we're still standing by for that morning status report.

CMP Okay. And - so we're going to the ops on the X-ray helium glow and EUV per Flight Plan. Right?

CC-H That's affirmative. Only modification is that on EUV, we want to use detector 1.

CMP Okay.

CC-H Vance, I'd like to mod my mod. We want - with looking at that 5-degree deadband we just went to, EUV would like to use detector 2 a nominal on the Flight - on the cue card.

14 52 45 CMP Roger. Back to detector 2.

CC-H Just shows, you got to be flexible.

CMP That's right (laughter). Okay. And do you want HIGH VOLTAGE POWER ON, I guess, on the X-RAY? You still want it ON, or not?

CC-H That's affirm. We want it - we want to turn it ON and leave it.

14 53 31 CMP Okay. That should take care of SIM bay, and now we'll get you a P52.

CC-H Okay. Looking great here, and if we can watch at all, well, we'll do so. Otherwise, we'll pick up the report, probably over Orroral. We're - we got you for about 3 more minutes here.

CMP Rog.

CC-H Okay. We're going to be losing you shortly on the - on the ATS, and I'm going to have you VHF at Or-roral here in about a minute and a half. And we're watching the 52. If we don't get it all, we'll hol-ler at you later.

14 55 36 CMP Okay, Crip.

14 58 01 CC-H Apollo, Houston. We're with you on VHF for about 5 minutes here.

14 58 17 CMP Okay, Crip.

CC-H And, Vance, you know - no need to acknowledge if you're working on 52 there. We did not see detector 2 selected on the EUV when we went over the hill. Just a reminder.

CMP I couldn't hear you, Crip. You're too weak. Please repeat loud***

CC-H Roger. We're saying, did not see detector 2 on the EUV. If you get a chance, you might reselect that for us.

14 58 49 CMP Okay. Now we're reselecting detector 2.

CC-H Thank you.

CMP Okay. Did you see her?

CC-H We're VHF and don't have data right now.

CMP Okay. Well, we can try it again.

CC-H Apollo, Houston. We're 1 minute from LOS; going to see you in about 30 minutes at Quito.

14 59 58 CMP See you at Quito.

15 29 48 ACDR Hello, Houston; Apollo.

CC-H We're with you, Tom. Talking to you through Quito for 4 minutes.

CC-H Apollo, Houston. How do you read?

ACDR Hello, Houston; Apollo.

CC-H Apollo, Houston. We're with you, Tom. Sometimes it takes us a few minutes to get locked up on uplink.

DMP Hey, Crip - I want to check a quick thing with you, on this Doppler transmitter.

CC-H Go ahead.

DMP Guess we're about 50 minutes from going to TRANSMITTER to OPERATE. But about 10 minutes ago, here, when we were trying to get your 45-degree lights on the fish, we turned all the lights off in here and I fumbled around and I tipped the DOPPLER from WARM-UP mode to OPERATE. And then I discovered my mistake and when back to OFF. So it was OFF for about 10 minutes before we discovered the problem, here. And I went back to WARMUP.

15 31 01 CC-H Okay.

DMP So we can go with the system on that and see if it's any problem.

CC-H Okay. Understand it. That's fine. Thank you.

CC-H Hey, Deke, while I got you here, could - you know, we're doing this purge, and we're trying to understand what our PPO₂ reading, that we're getting out of the docking module, is. And we need to - need to verify what our configuration is, because it doesn't seem like the PPO₂ is coming up as rapidly as we thought it was going to be. Can you tell us whether you ever installed that DM duct into the command module? And is it installed there now?

15 31 35 ACDR No, we didn't.

CC-H Okay, fine. And do we still have the DM fan running?

DMP Yeah, the fan's running.

CC-H Okay, fine. And we are only operating with one suit hose into the docking module. Is that correct?

DMP That's affirmative.

CC-H Okay. Real -

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DMP We're getting regular MASTER ALARMS on our O₂ FLOW,
so -

CC-H Yeah. We're - we're - we know we're purging through
it - I guess we'd done some preflight judgment on
how fast that PPO₂ was going to be coming up. And
it doesn't seem to be quite as fast. Probably, part
of that is explainable by only running with one suit
hose.

15 32 10 DMP Okay. And I'm reading about 200 on both A and B,
up here in the DM.

15 32 22 CC-H Rog. We're getting there. It's just taking a little
bit longer than we had anticipated.

ACDR Yeah, Crip. Isn't 200 plenty? I wonder - I can't
understand why people are in a sweat about it. Over.

CC-H No, Tom, it's not really a sweat. I guess - we had
predicted the rate at which it was going to come up.
It just seemed to be a little bit slower than what
we had anticipated. No problem.

ACDR Okay.

CMP Is the consideration of - purely - us working up
there, or what? I - I *** why you'd require a high
PPO₂, Crip.

CC-H Oh, they're just looking at worst case, after we
shut off the docking module for this cryo freezer,
on the nitrogen - if it was worst case putting -
putting out nitrogen, they want to make sure we keep
the PPO₂ fine. It's got lots of balances for safety,
there.

CMP Okay.

15 33 09 ACDR Okay, Crip. I got the DOPPLER RECEIVE OPERATE on,
exactly on time, at 195:03:00.

15 33 17 CC-H Okay. We're going to go over the hill here shortly.
Pick you up again at MILA in about 2 minutes.

15 36 08 CC-H Apollo, Houston. AOS through MILA. Should - be with you about 55 minutes here.

ACDR Okay. And why don't you check with the Doppler experimenter, Crip. How long does it take for - how fast do these Doppler reels rotate? Over.

CC-H Okay. What - if you're looking at that tape recorder, the reels - when they're going - you can - it's obvious to you. They're really spinning around. But - there - there's a long period of time they're on and off. But we can get some more details for you.

15 36 38 ACDR Okay. Well, they're not recording now.

CC-H Okay.

CC-H What you do is when you - when you look at it a little bit later, then you can just verify that the position has changed.

ACDR Okay.

CC-H And my Surgeon is anxiously standing by, any time you guys have managed to put together your morning report.

ACDR He can just stand by for a while. We've got snakes all over this place.

CC-H Roger that.

15 39 05 CC-H Apollo, Houston. We show that the furnace is still operating, and still got those samples in it, we assume, so don't want to - don't want to forget and leave those there.

15 39 21 CMP Right. Deke's turning it OFF now.

CC-H Okeydoke.

15 40 36 CC-H And that was a HIGH O₂ FLOW on your C&W.

15 40 47 ACDR Crip, I'll get these - these angles set in for you, for the ATS.

CC-H Okay. Appreciate it.

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CC-H And, Vance - whenever you get a chance, we'll take the P52 results.

15 41 55 ACDR Okay. If you're still through MILA, ATS is trying to lock on, but it's got lots of static.

CC-H Okay. How do you read me now?

15 42 46 CC-H Okay. We should be back with you, now, through the ATS.

ACDR Crip, what would - can we do to get ATS locked on? Over.

CC-H Okay. Might try a VERB 30 and look at your EMP if you haven't got the angles.

CC-H How about trying minus 25 and 221?

15 43 57 CC-H Okay. I've got VHF through Newfoundland talking at you until you get ATS locked up, Tom.

15 44 40 ACDR Should do it.

CC-H How do you read me now?

ACDR Loud and clear.

ACDR Hey, Crip - the one thing where they greatly missed on the time line is the amount of time it takes to stow all this and transfer this equipment. That's why I'm glad we started early.

CC-H Rog. How you doing now? You think you're going to make it all with no problem?

MS Yeah, we will - -

ACDR - - but we started about 40 minutes early, that's how we're going to make it.

15 45 09 CC-H Roger.

15 48 28 ACDR Crip, how do you read?

CC-H Loud and clear. How me?

ACDR Okay. Just to review, you want up in the docking module that DM - on the DOPPLER from WARMUP to OPERATE there on time in the Flight Plan which shows about - DOPPLER's transferred to OPERATED about 195:55?

CC-H That is affirmative.

ACDR All right.

15 50 29 CC-H That's another HIGH O₂ FLOW.

ACDR Thank you.

15 59 11 ACDR Houston, Apollo.

CC-H Go ahead. Apollo, Houston. Go ahead.

ACDR Stand by, Crip.

CC-H Okay.

DMP Hey, Crip. The question is page 13-2 DM check - prep, paragraph 5 says, "Remove from E-2 the alternate Contingency Flight Plan and stow it in E-3." And Tom's questioning, why do you want it?

CC-H Stand by 1.

END OF TAPE

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ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

16 00 08 CC-H The reason that we put that in there is if perchance that we should lose the ATS between now and - and entry, that has a no-ATS plan in there and that would just minimize the callups that we would have to - have to make to you. And that's the only reason we have it there.

DMP Okay. We'll pull it out and keep it.

CC-H And that's another HIGH O₂ FLOW you got.

CMP Okay.

16 04 03 CC-H Apollo, Houston for the AC. Tom, when you have had a chance to go back and check the Doppler or tape recorder, we would appreciate verification that it was operating.

ACDR I'll recheck it again. I - I recorded it when I hooked the thing up a couple of days ago - you know, to WARMUP. I went to - went to OPERATE, and those reels didn't move from the time - from when I first checked it in that WARMUP. I'll check it again.

CC-H Yeah. They - they - you wouldn't expect them to. They should've changed now after a period of 30 minutes have elapsed, they should have at least ran sometime -

ACDR Stand by.

CC-H Okeydoke.

16 06 11 ACDR Hello, Crip?

CC-H Go ahead, Tom.

ACDR These reels haven't moved.

CC-H Roger. Understand have not moved. And we can verify that everything as far as you can tell is hooked up properly. Is that correct?

16 06 24 ACDR Yeah. Roger. The other day I put - we had the DOPPLER - UVA/DOPPLER MNA circuit breaker IN. I

went to WARMUP, you know, exactly on time. And I went to OPERATE, and it's been in OPERATE ever - exactly at the call on time 95:03:00. And I recorded these reels when I first hooked it up, and I recorded when we went to OPERATE, and these babies haven't changed one bit.

16 06 50 CC-H Okay. Is that true on both sides of the units, all four of them?

ACDR That's right; all four reels. I recorded A, B, C, and D.

CC-H Okay. Thank you.

ACDR I've rechecked all the connections. I've got the orange band on each connector and everything.

16 08 16 CC-H Apollo, Houston. I - I could use the DP if he's got a minute there; I'm afraid we're going to have to interrupt his work there to have him run a small procedure.

ACDR Okay. Maybe I can run it for him unless he's up there; he's getting the probe squared away.

CC-H Okay, Tom. Let me - let me tell you what it is. Regarding this PPO₂ purge that we've been trying to raise up, we would like to go ahead and get - get all the O₂ in there that we can. And what we would like to do is to run through this DM/CM O₂ purge and take advantage of the last 6 pounds of O₂ that we've got left in the DM tanks. That's going to require performing that procedure that's on 15-1. The only small thing is that we anticipate running the tanks dry, so we're going to not be able to get the PPO₂ up to the 250 millimeters called out for in the procedure. We're just going to have to run it until we get the O₂ quantity down to zero or the - you - you feel the O₂ stop coming out that little nozzle.

ACDR Is that in the Systems Book?

CC-H No, sir. That's in the DM Checklist.

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ACDR Okay. Deke's on the headset; he's reading you.

CC-H Okay, Deke.

ACDR ...

CC-H Did you - did you copy what I was telling Tom about we wanted to run that DM/CM O₂ purge?

DMP Yeah. I did, Dick.

16 09 33 CC-H Okay. Again, a caution about the - the tanks are going to run out and your - before you get to PPO₂ up to what it's called for, the 250 millimeters. And so you can go ahead and stop it as soon as you feel the tanks are empty. One other item addition in there, you might as well go ahead and open up the SUPPLEMENTAL O₂ FLOW also to get all of the flow you can out.

DMP Good idea. Okay. We'll do her.

CC-H Okay. And before you initiate that, if you can get somebody in the command module to go ahead and CLOSE the WASTE STOWAGE VENT valve, we'll stop that purge through there.

ACDR Okay. I'm talking the waste stowage vent QD off.

16 11 04 CC-H Okay. Tom, if you want - it's purely your option, but we would like to keep that vent on there in case we need to put in a little bit later. You can just go ahead and turn the valve to - to off and leave the QD on. It's okay to go ahead and enter with it there. We are going to probably be doing some more purges later because we don't have enough O₂ - -

DMP Okay.

CC-H - - don't have enough O₂ in the DM.

DMP Dick, just one point on this procedure, not that we're ever going to use it again, but I forgot to mention last time, it never tells you to turn on the O₂ REGULATORS and without them on, you can't purge. At least not in this vehicle.

CC-H You're right.

16 12 40 DMP Hey, Crip, there's another point here in this procedure, I don't think we buy anything by going to SUPPLEMENTAL, because we've got to maintain pressure between 250 and 275. Otherwise, we're going to start probably popping the relief valve in the DM, as I understand it.

CC-H Okay. We weren't sure that - that you might not need it just to get it up - get the flow enough to keep that, but you can play that by ear.

DMP Okay.

16 13 12 CMP Purge is underway.

16 13 44 CC-H And for the AC: Tom, the only idea we come up with right now on that Doppler recorder is that there are two connectors on the recorder itself. One is a GSE connector, and the other one is a flight one; the cable will go into either one of them. We want to verify that - if you will, please - that it is connected to the flight connector.

ACDR Okay. I checked that before. Let me check it again. You'd better believe it; it's connected to flight.

CC-H Okay. And the circuit breaker on 274. You reminded us is IN, already, right?

ACDR I've checked that every night and every morning and at every warmup, and then I went exactly to OPERATE on time.

CC-H (Laughter) Roger.

ACDR I can put my hands on the - on this recorder here in the silver box, and it feels like - that there's little vibrations in there, like something's going on.

CC-H Okay; copy that.

ACDR Crip, you don't suppose that when they labeled this flight GSE that they got the things backwards, do you? I'm sure it's all been checked out.

CC-H Well, I ran it once at the Cape, and I connected it to the flight one and it ran.

ACDR Okay.

16 15 48 ACDR Crip, when you ran this thing at the Cape, how fast do these reels turn over, can you see motion when those numbers turn?

16 15 54 CC-H Yes, sir. It's real obvious that it - when it goes - when it starts going around. Problem is, it - it runs like every 12 minutes for only a short period of time. And it only runs about 10 or 11 seconds when it is running.

ACDR How many numbers does it go through?

CC-H Oh, it spins a whol - it's a little wheel down there, and it goes all the way around them several times.

ACDR Yeah?

16 17 00 ACDR Have you got any other suggestions on this bear?

CC-H I'm a - I'm - I'm afraid we haven't right now; we're still scratching our heads.

ACDR And I have quadruple rechecked everything. We got the white dot to the white dot on the flight recorder thing and the switches, the breakers, everything.

CC-H Okay, Tom. We appreciate all your efforts.

16 18 14 CC-H Okay, Tom. Right now we're - we're pondering cycling switches and that kind of stuff. You can carry on with your other activities, and we'd like you to come back and take another look at it a little bit later, about 5 minutes or so, to see whether - see whether anything's changed.

ACDR Okay.

16 18 54 CC-H And for Vance: I don't know if he mentioned earlier - heard me earlier rather, but anytime he gets the chance, we'll take his P52.

CMP Okay. We'll give you the P52.

CC-H The results, that is.

ACDR Crip?

CC-H Yes, sir.

ACDR Crip, our cabin pressure's now below around 5 - 5-1/2, I mean.

CC-H That's affirm. We - we watched it here.

CMP I'm keeping an eye on it up here so we don't get over 275.

CC-H Okeydoke.

16 21 32 CC-H For the DP: Deke, while you're sitting there playing with your PPO₂, you got time to listen to some words about - about red tide?

DMP No, not unless it's time-critical, Crip, because I'm not sitting here; I'm still trying to get things tied down.

CC-H Okay. Go ahead.

DMP But if it's time-critical - -

CC-H Well - -

DMP If it's critical, I'll take it.

16 21 52 CC-H Well, let me go ahead tell you then. You just listen to me, and you go ahead and do your work. The - where the next time we come across the States, we are going to be back in a position to get the - the red tide, basically same area we talked about yesterday. And all we're going to do is just ask you to photograph a strip starting by Cape Cod going up - going up the East Coast, and if you can go ahead and - and do that up to about Nova Scotia, well, that's all we're after. And I can talk to you about it when we get there.

16 22 20 DMP Sure. Hey, that's easy; we'll do her.

CC-H We see - -

DMP I think that'll need different lens.

CC-H We see - -

DMP ... for anything that they want.

CC-H Deke, we see the cabin pressure coming down now. If you think the tanks are empty, you might as well go ahead and stop it.

16 22 36 DMP Okay, she's reading, oh, about 8 percent.

CC-H Cabin's pressure's coming down now. Why don't we go ahead and terminate it?

DMP Okay.

DMP Okay, Crip. I closed the dump. And I'll - I'll let her bleed on down here a little bit and keep a close eye on the pressure.

CC-H Okay, fine.

CC-H And for the AC: Tom, since we were talking to you through that time period, we won't need to verify that we did get the DOPPLER TRANSMITTER to OPERATE.

ACDR Deke's working that right now.

16 23 36 CC-H Okay.

16 23 40 ACDR Okay.

CC-H And when you did that, of course, we - -

ACDR 96:01:37 was the Doppler OPERATE to ON.

CC-H Okay, fine. And we need to get a verification on that - on the systems meter down in the command module, too.

16 24 16 ACDR 195.

CMP Okay, Crip, here's your P52 results.

CC-H Send it to me.

CMP Stars 4 and 34; NOUN 05, all zips; NOUN 93, plus 00.112, minus 00.104, minus 00.036; port - torqued at 194:34:50.

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CC-H Thank you very much, Vance.

CMP Right.

16 26 00 CC-H Okay. Since we've terminated the DM/CM purge, we'd like to go ahead and open up that WASTE STOWAGE VENT valve, and we'll continue to purge in that manner. Also, X-ray's got a problem, and we'd like to go ahead and turn the HIGH VOLTAGE OFF on the X-RAY instrument down there at 230.

16 26 23 CMP Okay. You want to go back to waste purge and X-RAY HIGH VOLTAGE, OFF.

CC-H Thank you very much.

16 27 49 CMP And, Crip, you might tell John Boyd that D-3 isn't a whole lot easier to get in in weightlessness than it is in one g.

CC-H Didn't think it'd be too much; alinement's kind of a problem there.

CMP Yeah.

16 28 59 CC-H Apollo, Houston. For the AC: Tom, if you've got a chance now, we would appreciate it, to recheck that recorder; we've got a couple of minutes left here on ATS.

CC-H Also, Deke, to make everybody feel comfortable here, on - when you pulled out the - the last samples out of the furnace there, can you verify that putting the Krytox on it helped them come out fairly easy?

DMP Yeah, they did, Crip - no problem at all.

CC-H Okay, fine.

DMP Yeah, they're out, and the furnaces are shut down, and the samples are stowed in the CSM.

CC-H Roger.

ACDR Okay, Crip. These reels haven't moved a bit.

CC-H Okay. When we go - go out over the hill here, we're going to have you go ahead and cycle the RECEIVER switch to - to WARMUP for 30 seconds and then put

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it back to OPERATE. And then take another look at it about 15 minutes and see what happened.

16 30 08 ACDR All right, good. At what time do you want that?

16 30 10 CC-H You can - you've got a GO to go ahead and do it now, I guess. And we're going to go ahead and go over the hill here, and see you in about 36 minutes at MILA.

ACDR Okay. I'll cycle it back to WARMUP and then back to on and check it in 15 minutes.

CC-H Okay. And when you do cycle that, don't - don't stop at the OFF position. In other words, take it through pretty rapidly to WARMUP.

16 30 47 ACDR Okay, it's done.

CC-H Okay. Thank you.

ACDR And check it 15 minutes. Roger?

CC-H That's affirm.

CC-H And, Apollo, Houston. You've got a GO to go ahead and close up the DM, assuming you've got everything tucked away like it's supposed to be.

ACDR Yeah, we're still working.

16 31 18 CC-H Rog. Well, we're - we assume that you're going to finish that up while we're over the hill.

17 06 34 CC-H Apollo, Houston. We're AOS at MILA, should be with you about an hour.

ACDR Okay. Roger. And we've got tunnel-hatch number 1 in, and we're checking the integrity now.

CC-h Okay, Tom. Did anything - any success with that recorder?

ACDR Yeah, I got some good news on part of it. I just recorded it. A - reels A and B have moved; that worked on A and B. It looked like C and D had not moved or else they may have moved and came back to same place.

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CC-H Okay, it's kind of unlikely they would have come back to the same place, but that's certainly good news about A and B.

ACDR So, I'm standing by and see if you want to do the procedure again - just whatever you want to do down there.

CC-H Okay, did you - you - that you saw move after you cycled that switch when we went over the hill awhile ago, right?

17 07 20 ACDR I cycled the switch, and I checked it in 15 minutes, and they'd moved.

CC-H Beautiful.

CMP And, Crip, hatch number 1, is in, and we're venting the tunnel 1 right now.

CC-H Apollo, Houston. If you can give us a readout on the reels, we'd appreciate it.

ACDR Stand by.

CMP Okay, Crip. Originally, the A was 5-1/2; B, 17; C, 11; and D, 12. After that going to WARMUP and back real fast to OPERATE, I checked in 15 minutes: A was 9, B was 13-1/2, C was 11, and D was still - C and D were the same. C was 11, and D was 12. Over.

CC-H Okay, we copy. Thanks a lot, Tom. I guess while we're sitting here a couple of items that we do need to get out of the road is, we see that battery Alfa's still charged, and, Tom, when you get to it, we'd like to terminate that charge. And also we can go ahead and set up for our logic sequencer check. Probably I'll just go ahead and wait on that one until we get tied up with the ATS here in a few more minutes ...

DMP Okay. I can terminate the charge now if you want.

CC-H That's fine. You can go ahead and do that then on battery Alfa.

DMP Okay.

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CC-H Apollo, Houston. Just a little bit of information: of course, those recorders are redundant so A and B will suffice if it's working properly to - which it sounds like it is - to get data on it. And we are seeing a lock indication here on the transmitter, so we know all that's working properly.

17 10 14 ACDR Sounds good.

17 10 20 CC-H I had talked to Deke briefly awhile ago about coming up on the red tide, which we're going to do - do here about this time. And it's kind of - kind of close. I don't know whether you guys are going to be set up for it or try to get the photos or not. Whatever y'all wanted; it'd be - it's out of window 3.

DMP Okay, how much time we got?

CC-H Oh, you're about - about 3 minutes away from an initiation of it. That's pretty quick.

ACDR Okay, you want the 50-millimeter lens? And if they give me a couple of quick settings, we'll get a new mag and try it.

CC-H Okay. Recommend a 50-millimeter lens and f-stop of 6.7; speed 1/250. And recommend the orange filter, if you got time to get it on.

17 11 39 ACDR Okay, ready to go, Crip.

CC-H Okay. You should be coming up on it shortly here. If you could - what they'd do is - like you to just photograph coming up along Cape Cod here all the way up to the bay there, coming in on Nova Scotia.

ACDR Roger, Crip. Check your windows again. I think window - window 3's looking at the Sun right now.

CC-H Well *** How do you read me now?

DMP Yeah, the only place I can see the ground at all is out of window 5 right this minute.

CC-H Okay. We - we had thought window 3 was going to be down. Whatever one you think looks best.

17 13 00 ACDR Crip, what time do you want us to start that sequence?

CC-H On the - on the photos?

ACDR Yeah.

CC-H You can go ahead and start it up on the upcoming 52. I told you orange filter awhile ago, that filter's only applicable if we've got - got an IF mag in.

17 13 53 ACDR Hey, Crip. Do you read me?

CC-H Yes, sir; go ahead.

CC-H Apollo, Houston. How do you read?

CC-H Apollo, Houston. We should be back with you now. How do you read?

DMP Yeah, we read, Crip. I'll tell you the problem here; can see it out the bottom of window 3 coming right across Cape Cod, right up the coast there through Boston and the whole works. The problem is that we're so close on top of it that there's no way to get a camera in the window to shoot it.

CC-H Rog. Understand.

DMP And we're already by it.

CC-H Copy.

17 15 27 DMP As far as visual's concerned, I didn't see anything any different there than yesterday. There's a lot of sediment all along the coastline there. And I'd sure hesitate to call anything red tide in there that I've seen. It looks to me like it's all sediment coming out of those rivers because it's the same color as the flow out of the river.

17 15 51 CC-H Okay, that's a good comment.

CC-H They - some of the support ships that we've got out there that've been sampling have been reporting a high chlorophyll content in the water and maybe that's some - they've been suspecting that's coming out due to heavy rains they've had up there.

DMP Rog.

17 16 41 ACDR Hello, Houston; Apollo.

CC-H Go ahead.

ACDR Can we go ahead and get that EUV powerdown and the X-ray and helium glow, so we can dump some urine overboard before we go ahead with those suits?

CC-H We'll get a quick check on that. Don't see a big problem. One item we would like, though, is that we did want to do a contingency powerdown on the X-ray, which is going to basically just purge all the gas out of that unit so it'll allow us to do sort of an engineering check on it. When you do the powerdown, I would like you to do the X-ray contingency powerdown which is in the Checklist, Experiment Checklist, page 1-24.

ACDR Okay.

CC-H An additional item on that is after we get it powered down, I'll give you a reminder that we do want to go ahead and turn OFF the LOW VOLTAGE POWER when we complete it.

CC-H Apollo, Houston. You've got a GO to go ahead and start securing those experiments in the SIM bay.

ACDR Roger.

17 18 01 CMP And, Crip, hatch 1 passed the leak check, and now we're venting it the rest of the way.

CC-H Okay, fine. Thanks a lot, Vance.

17 19 24 CC-H Apollo, Houston. For the DP: Deke, one item we'd like to verify, when we had you doing that CM/DM O₂ while ago. Did you close the O₂ PURGE valve?

DMP Yes, I did.

CC-H Okay. It makes everybody feel nice and comfortable down here knowing that. Thank you.

ACDR Okay. Crip, did you want - on this contingency purge - did you want the X-RAY low VOLTAGE POWER to stay ON?

CC-H Want it to stay ON for the duration there. When you get right down to the last, you can go ahead and we -

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after we close the cover, we'll go ahead and turn it OFF at that point.

ACDR Roger.

17 20 23 CMP Okay. We're on the contingency powerdown. X-RAY PURGE, START, now.

17 20 30 CC-H Okay, Vance. Thank you.

17 21 09 CC-H Apollo, Houston. At - at your convenience, we are standing by for the logic sequencer check.

ACDR Okay. We're waiting 5 minutes on that last - next to the last X-RAY LOW VOLTAGE POWER, ON.

17 21 29 CC-H Roger that.

17 21 37 ACDR Okay. Deke has the day report so your Surgeon won't be nervous anymore.

CC-H Okay. I'm sure the Surgeon would be - he's been waiting down here all morning just to hear it.

DMP Okay. Ready to copy?

CC-H Yes, sir. Shoot it to us.

DMP Okay. AC: meal A, everything except coffee and substituted tea; meal B, everything; meal C, everything. Oh, he had two extra coffee's in there somewhere later. Okay, medical log: PRD is 11013; 6 hours of good; two Lomos; and a full tank of water.

CC-H Okay.

ACDR Deke, why don't you get that off, and then we'll - we'll do the logic sequencer check next.

DMP Okay, CP: meal A is complete as written; meal B, the same except for cookies; meal C, complete. Okay, medical: PRD, 48295; 6 good; no medication; and about 70 seconds.

CC-H I'm sorry, would you say the PRD again. I don't think I got that right.

DMP Okay. It was 48295.

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CC-H Very good, Thank you.

DMP Okay. I have the DP: breakfast, everything; lunch, scratch the macaroni and add a salmon; and in the evening, scratch potatoes and cherry nut cake, add an orange drink. And medical: PRD, 61001; 6 hours for sleep; no medication; 60 to 70 swallows.

CC-H Okay. We got all that.

DMP Okay.

17 23 56 ACDR Okay. Now we got the important stuff out of the way, you ready for some minor thing like logic sequencer check.

CC-H Okay, we'll take that minor little thing.

17 24 07 ACDR Okay. We're ready to go. We're down to where it says, "Coordinate next two steps with STDN." We're ready to CLOSE the circuit breaker SECS ARM.

CC-H We're GO.

17 24 18 ACDR SECS ARM 1 and 2 are - were CLOSED. SEC LOGIC now ON and up.

17 24 33 CMP And we've got them all.

CC-H Okay, and we are GO for PYRO ARM as required.

CMP Roger.

CC-H Okay. And whenever you guys want it, I have got your DM jett pad, which is over on the next page.

DMP Stand by, Crip - -

CC-H Okay.

DMP - - 1 minute.

17 26 10 ACDR Crip, we have completed the X-ray contingency power-down - -

CC-H Okay. Thanks a lot.

ACDR - - with the LOW VOLTAGE POWER still ON as per checklist.

CC-H Okay, if you've completed and you're already got the cover CLOSED, we'll go ahead and take the LOW VOLTAGE POWER to OFF, please.

17 26 29 ACDR Coming OFF.

CC-H Okay, Tom. I'll get the other two items - before you guys start getting all suited up there, I wanted to get up to your DM jett pad and, also, we would like to get one more look at that Doppler recorder; see what the numbers are reading now.

ACDR Okay, give me the jett - give me the jett pad first.

CC-H Okay. And you got that out? It's over - should be over on the next page of your Flight Plan - 62B.

CC-H I'll come at you when you - when you tell me you're ready to copy.

ACDR Okay, ready to copy.

CC-H Okay. For time, 199:23:48.00; attitude, 089, 332, 003; jett time is 199:25:00.00. Read this back, please.

ACDR Okay. DM jett, 199:23:48.00; 089, 332, 003; 199:25:00.00. Over.

17 28 15 CC-H Okay. That's a good readback, Tom. And for your information, due to Vanguard being - sailing and us moving it slightly, we now are going to be in ground contact when we do the spin, and we'll be able to watch the jettison here to be of whatever help we can be and, hopefully, no hindrance.

ACDR Roger.

17 28 40 CC-H One - while you've got that page open there, I might point out one - one - we have - our attitude is not exactly what it was when we - were initiating this maneuver - it's - what we thought it was going to be; consequently, to get there on time, it would probably help if you initiated your VERB 49 maneuver at 39 minutes on the DET vice 40. And I can - if that is not clear to you, I can talk about it a little bit later. We drifted off awhile ago when we were doing a P52, we think.

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17 29 10 ACDR

Yeah, okay. It's 39 instead of 40. We can go there quite a bit earlier, too. No problem.

17 29 13 CC-H

Yeah, there's no problem on that.

END OF TAPE

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Time: 204:17:30 to 204:19:00
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ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

17 32 51 CC-H Apollo, Houston. Whenever you get a chance, we're standing by to hear - hear how the recorder looked, to get all the numbers.

ACDR We're still trying to work out some other problems here, and we'll get it - -

CC-H Okay.

ACDR - - get back with you in a minute.

CC-H No - no problem. I'll stay out of your hair. I know you got to worry about getting suited up and so forth.

DMP Hey, Crip.

CC-H Go ahead.

DMP Can somebody in experiments ... tell us real quick, do we do any more crystal growth or ZFF photos?

CC-H Check that for you.

DMP We can look it up ourselves, but I think - -

CC-H We - we - we - it's a heck of a lot easier for us to do it.

17 34 13 CC-H Deke, you've got one more today and one more tomorrow.

DMP On both of those. Okay, thank you.

17 34 27 ACDR Okay, Crip. Reel A now reads 5-1/2, B reads 2-1/4, C reads 11, and D reads 12. C and D have not moved.

CCH Rog. Understand.

17 36 53 CC-H Apollo, Houston. One item before you get in a position with the suits where you can't do it, which I hope you aren't yet. We do want to get the WASTE STOWAGE VENT valve CLOSED. We'd like to keep it - keep the vent going as long as we can, though.

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17 38 18 CCH Apollo, Houston. If you copied my call on the WASTE STOWAGE VENT, appreciate the acknowledgment.

17 38 25 DMP Yeah. We got that ...

CCH Okay. Thank you, Deke.

17 40 20 CMP Houston, Apollo.

CCH Go ahead.

CMP Got some good news and some bad news. The good news is that the tunnel's all vented and we're kind of on schedule. The bad news is that I can't find the DAC timing cables in A-6.

CCH Let's see if we can help you out.

ACDR Okay, Crip. We're back with you. Did you have another call that we missed?

17 42 20 CCH That's - that's a negative. I was - we're still trying to find the - where the timing cable might have been located. It was supposed to have been in A-6. I don't believe - don't believe you guys have used that particular cable this - this mission yet, have you?

DMP No, I'm sure we haven't. And I recollect seeing it in A-6 sometime or another, so I figure -

CMP Okay. Just found it. It was in A-6, just a little obscure.

17 42 45 CCH Yeah. Keep a lot of stuff in there. Well, that's good. Well, at least you - you - you had a flurry-ing around down here for a minute. Need to give Nygren something to do anyhow.

17 53 05 ACDR Houston, Apollo.

CCH Go ahead, Tom.

ACDR Okay. Look in page 129 of the Experiments Checklist, please.

CCH Stand by 1.

CC-H Go ahead. We're with you.

17 53 25 DMP Okay. It shows here when I got this - we're supposed to run for 10 seconds with the lens covered and then turn it off. And we do the same thing at the end. Can you find out why they want that done? Because we're running out of magazine here, which we think may or may not last through this whole thing. And we sure hate to waste any film unnecessarily.

CC-H Okay. It's - what - what it is, is just protective film to make sure that - that what we get of the jett is - is good. We would like to go ahead and run it if you can.

ACDR Okay. They'd just as soon get that, and if we run out before we get to the end, they don't care.

CC-H That's - that's my understanding, but let's get a verification on it.

DMP Okay.

17 55 05 CC-H Deke, we see, looking at that, that we're expecting 15 percent. Can you tell us what - what kind of reading we got on the mag now?

17 55 15 DMP Well, number 1, we haven't even got that mag on - -

CC-H Oh.

DMP - - we got a mag CX04. We're scratching around here like mad trying to find film. And we might have 15 percent on this mag, I don't know.

CC-H Understand - -

DMP We hope we have.

CC-H - - you got CX04 in there now.

DMP That's correct. We're just about out of 16 millimeter, and we've been scratching around for magazines that got anything left on them. And this is one of the few we got with anything left.

CC-H Okay.

18 00 07 ACDR Crip, how soon are we going to have the DMI maneuver - pad?

CC-H Well, we're working on the pad right now. We - are you interested in the time of it? Is that correct?

ACDR I assume the time is per Flight Plan.

CC-H That's affirm. Well, it's going to be about - running about 5 minutes later than what you got in there because we've delayed the jett slightly.

ACDR Roger.

18 01 55 CC-H Apollo, Houston. We're coming up on LOS from the ATS, and we'll see you again at Vanguard in about 9-1/2 minutes. And we're reverifying the settings for that - that camera, since we're using different kind of film in it, for Deke.

18 02 12 DMP Okay.

18 11 33 CC-H Apollo, Houston. We're AOS Vanguard for 5-1/2 minutes.

DMP Okay.

CMP Okay, Crip. We have 1 and - 1-1/2 of the people suited.

CC-H Very good. I'm not going to ask who's the half. Or which half.

CMP Well - right. Actually, one person suited and one guy half suited.

18 12 05 CC-H Roger.

18 16 19 CC-H Apollo, Houston. We are 1 minute from LOS. Next station contact in 19 minutes, through Goldstone, at 198:13. 198:13.

CMP Okay, Crip. See you there.

18 16 31 CC-H Okeydoke.

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18 35 03 CC-H Apollo, Houston. We're AOS Goldstone. We have you for 3 minutes.

CMP Okay. Loud and clear.

CC-H You guys manage to get all tucked away in your suits there?

18 35 42 CMP Yeah. We're in suits. Sort of - standing by for the integrity check.

CC-H Okay; copy that.

CC-H Vance, while - while we're standing by, one item I might mention was a - was a late change. I think you were aware of it, but right after you jettison, we used to delay 2 seconds before going to CMC MODE, HOLD, and we're now doing that at 15. That allows you to get back in the retrograde maneuver and should be able to pick the thing up a little bit better.

CMP Okay; yeah. I realized that but I appreciate the reminder.

18 36 32 CC-H We show the SURGE TANK going down and have a HIGH O₂ FLOW now.

CMP Yeah, that was because we had the SUIT RETURN valve CLOSED a little bit earlier.

CC-H Copy.

CMP Checking it out. It's easier to work in zero g than it is in ... suit ...

CC-H Certainly couldn't be any harder.

CMP That is, I think that's the case if a guy can just get in a good position before the pressure ...

CC-H Okay, Vance. Be advised I'm reading you pretty weak. I guess your mouth is a little bit aways from the mike there. Probably kind of hard to do it. We're about a minute from LOS, and see you at Rosman here - correction, see you at New-foundland in about 8 minutes.

18 37 34 CMP Roger.

CC-H Somewhere along in there, it'd probably be better to wait until you get to Madrid, I'll give you an update on your - your DMI - well, I'll give you the DMI pad.

CMP Okay.

CMP Yeah, if we could get that before we get buttoned up in suits, that'd be great.

CC-H Well, I - I've got it whenever you want to - got a convenient time to copy it.

18 39 06 CMP Okay, ready to copy DMI pads.

CC-H Why don't we - we'd better - we're going over the hill here. We'd better wait until we get to Newfoundland, Vance, I'm afraid. It's 6 minutes from now.

18 39 17 CMP Okay.

18 45 20 CC-H Apollo, Houston. We're AOS through Newfoundland. Should be with you a total of about 50 minutes with the ATS.

18 45 51 CC-H Apollo, Houston. We're with you through Newfoundland, and if you're reading good enough, we can go ahead and try to get this pad up.

CMP Stand by.

CC-H Okay. No rush.

18 50 10 ACDR Crip, go ahead.

CC-H Okay. Would guys like to - to copy down the pad now. Is that correct?

CC-H It's on page 64 - -

ACDR That's right.

18 50 19 CC-H - - 64A. For DMI. Starting out with your NOUN 33's. 200:00:00.00; plus 018.5, all balls, minus 025.0; 358, 351, 003; 013.1; 00:01. Delta V_c at ignition and tailoff are not applicable. Your weight is 25450; trim angles, minus 0.09 and minus 0.76. Like you to note that, contrary to your cue card, your tailoff should be 18 feet per second. And if you guys are going to be able to reach them after part of this burn to set them up, your high-gain antenna angles will be minus 58 and 334, which would allow us to see the burn. I don't know whether you can get to them with your - with your suits on and your helmet and gloves off, which is configuration you'll probably be in when you get there.

DMP Yeah. I think we can get them.

CC-H And standing by for a readback when you can give it to me.

18 52 07 ACDR Okay. 200:00:00.00; plus 018.5, all balls, minus 025.0; 358, 351, 003; 013.1; 00:01. Delta-V ignition delta-V tailoff is NA. 25450. Pitch trim, minus 0.09; yaw trim, minus 0.76. Over.

CC-H Okay. That's a good readback, Tom.

ACDR And I got the high-gain angles as pitch is minus 58, and yaw is 334. Yeah, if the suit - if the cabin pressure is good, there'll will be no problem in getting it at all. After - that's after - after the burn - after the burn, right?

CC-H Well, if you could - -

ACDR Or after burn attitude.

18 52 51 CC-H Well, if you could get them - when you get to the burn attitude, if you could set them in, that would help us.

ACDR That'll be no problem.

CC-H Okay, fine. While I've got you on the line, Tom, our friendly flight surgeons are somewhat concerned about the Lomotil, and I guess they would kind of like to know when you took them yesterday, and what the symptoms were.

18 53 12 ACDR Yesterday evening, prophylactic. And I'll discuss
it with them after I get on the ground. Over.

CC-H Copy that.

18 53 32 CC-H Okay. And as soon as we lock up here at Madrid,
which is about a minute and a half away, we'll need
ACCEPT, and we'll go ahead and give you a target
load for this burn.

ACDR Roger. You - you said you'd be locked on - on the
ATS in a - within a couple of minutes.

18 53 49 CC-H We've got you on ATS right now. Was - you can go
ahead and give us ACCEPT, and when we get at Madrid,
we're going to go ahead and ship you a target load.

18 53 58 ACDR Roger. You've got ACCEPT.

18 54 39 CC-H Apollo, Houston. We just saw MC&W but we can't
correlate it with anything. Can you help us?

DMP Well, we assume it's HIGH O₂ again, although we
didn't see it.

CC-H You did not see it. Okay, we associated it about
the time that BMAG came ON back there, but could not
correlate it directly.

END OF TAPE

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TAG Tape 204-11/T-106
Time: 204:19:00 to 204:20:30
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ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

19 01 24 CC-H Apollo, Houston. We've completed our target load, and the computer belongs to you again. You can go back to BLOCK.

CMP Okay. And as you can see, we're in the middle of our pressure integrity check.

CC-H Roger. EECOM'S down here watching it very intently.

CMP Looks like we have a good tight signal.

CC-H Roger.

19 03 04 CC-H Hey, one item, Vance, I might ought to mention to you a little bit ahead of time; I don't think it makes that much difference. But right after you finish up that burn, you're going to go to a vis obs attitude. And we never did update - change your NOUN 78 R2 value from 9000 to 6000. Figured you'd catch that on your own, too.

CC-H Okay. We copy. It looks like you've finished your suit integrity check. And, Vance, did you copy what I was talking about for your vis obs attitude, following the burn?

CMP Yeah. Tom got it.

CC-H Okay. That's fine. Only one other item is that it's probably going to take you pretty close to gimbal lock, and you may have to fly around the ball.

19 04 46 CMP Okay. Thanks for the warning.

ACDR Hello, Houston; Apollo.

CC-H Go ahead, Tom.

ACDR Okay. Just looking at the event timer. Okay, I - Never mind, we got it squared away.

CC-H Okay. We copy. DET is probably coming up on 22:00 right now. You got it set?

19 09 02 ACDR MARK it. 22:00.

CC-H Rog.

ACDR How do you read, Crip?

CC-H Loud and clear. How me?

CC-H Apollo, Houston. Were you trying to get to me for something?

CC-H Apollo, Houston. How do you read?

CMP Read you loud and clear.

CC-H Okay. I thought - Tom had been trying to call me there and couldn't get back to me.

ACDR No, you - I called once, and you came back with the right answer.

19 10 26 CC-H Okay.

CC-H Apollo, Houston. One other comment regarding your DMI burn. That - there's a note in your Flight Plan, there, about trimming all axes to 0.2 feet per second. And we want to follow that unless, for some reason, we get a residual as large as - like 2 feet per second - and in that case, we do not want to trim it out. Something would have been wrong, and we'll work that.

19 12 12 CMP Okay. If it's less than 2 feet per second, we trim it out to less than 0.2.

CC-H That's affirm.

CC-H And I don't know if you noticed, there, but that attitude for that burn is about 180 degrees in roll different from what we had originally planned. And that is to allow us to have ATS coverage here. It's like I talked earlier to Tom, about how - and the angles that we've got will give us that.

CMP Okay.

ACDR Crip, we're now going through the prejet checklist.

CC-H Roger.

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19 13 21 ACDR Okay. And we're up to the point where it says,
"Coordinate next two steps with STDN (if possible)."
So it looks like it is possible. So circuit breaker
SECS ARM, two, coming CLOSED.

19 13 36 ACDR Okay. SECS LOGIC, two on, up.
CC-H And we're GO - -
ACDR Gee, I hope everything looks good.

19 13 49 CC-H It looks good here. We're GO for PYRO ARM, as
required.
ACDR Sounds good.
CC-H Okay. A couple items. We didn't see you put the
FDAI scale to 5/5. And, also, we need - we'd like
a verify, for panel 227, that the SCIENTIFIC INSTRU-
MENT POWER is ON - if you can see it.

19 15 10 DMP Yeah. It's ON.
CC-H Okay.
CC-H Okay. All looks good here.

19 23 59 CC-H Apollo, Houston. This will give you a warm feeling.
We're GO for DM jett.
CMP Super.
CMP So are we.
CC-H Super.

19 26 04 ACDR Okay. Crip, we're maneuvering at 39:00 on the DET.
CC-H Roger that.
CC-H We've still got you for about 9 minutes, and we're
watching the data.
ACDR Okay.
CC-H Yeah. We may lose you a little bit early due to the
maneuver here. If I do, I'll have VHF at - through
Orroal in about 11 minutes.

19 26 37 ACDR All right.

19 31 32 CC-H We're going over the hill; see you at Orroral in 6 minutes.

CMP Okay.

CC-H Well, maybe we won't; we - look like we done arrived there.

19 31 47 CMP Goodby and hello.

CC-H Well, I hate to leave you. This is the most exciting event we've had in a couple of days. We got the - got the whole - -

CMP Right.

CC-H - - control room full down here.

19 32 51 CC-H Check your 79's; they're at 50 000, not 5.

19 33 01 CC-H Apollo, Houston. You copy, regarding R1 on 7.9?

CMP Rog.

19 34 00 CC-H All that looks super from here.

ACDR Okay.

CMP Very good.

CC-H This time, we really are going to leave you. Call you on VHF next.

CMP Okay.

19 34 12 CC-H Apollo, Houston. AOS Orroral for about 3 minutes.

CMP Roger. Loud and clear.

CC-H Rog.

19 40 39 CC-H Going over the hill at Orroral. See you at Vanguard in about 2-1/2 minutes.

CMP Rog.

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19 43 01 CC-H Apollo, Houston. AOS Vanguard, 7 minutes.
ACDR Roger.
CMP Roger, Crip.
ACDR You'll be able to monitor the whole sequence. Over.
CC-H That's why - that's why we got the Vanguard under way, so we could do that.

19 45 50 CMP We're maneuvering.
CC-H Roger.

19 48 02 CMP Okay. She went off real good, Crip. We don't see her in the window yet. We went to HOLD at 15 seconds.
CC-H Roger that. Nice job.
CMP We want to get those pictures though, too.
CC-H That's affirm.

19 48 42 ACDR Okay, Crip. Pressure's looking beautiful here. We're going to pop these suits and helmets and try to look for the bear.
CC-H Okeydoke.

19 49 37 CC-H Okay, we're a minute from LOS. Our next station contact will be Goldstone in 18 minutes. That's at 199:46. Good luck on spotting it.

19 49 46 DMP Okay. We got it now, Crip.
CC-H Very good.

19 50 08 CC-H A little reminder, when you get to it, to get the SUIT CIRCUIT RETURN, OPEN, but no - no rush.
DMP Get the which?
CC-H SUIT CIRCUIT RETURN VALVE. We monitor it CLOSED now. That was the reason for the O₂ FLOW.

19 50 21 DMP Okay.

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20 06 02 ACDR Hello, Houston; Apollo.

20 08 23 CC-H Apollo, Houston. We are AOS Goldstone, 3-1/2 minutes.

20 08 27 CMP Okay. We finally caught sight of the DM, below and to the left of us, and got a lot of good movie film of it. It seemed to be tumbling the way everybody wanted it to. With reference to the Earth, it was in a vertical plane when it tumbled.

CC-H Okay, Vance. Super job. At least two or three "atta boy's" for that one. It seemed to be quite a bit low, and you said - how much to the left? Very much?

CMP Oh, I'd guess - had to get very close to the window to see it, so I'd guess - 20 to 30 degrees. Or - more than that. Maybe 40 - 30 to 40.

CC-H To the left.

CMP Right. Right. Correct. To the left.

CC-H Okay. To the left would've been - I was trying to look at it from your perspective, there. That would've meant that we should've kept going more than the 15 seconds. Is that what you - what you're thinking?

CMP Less.

CC-H Oh, yeah. Okay. Yeah, it would've been less, okay, because you were yawing around to the right.

CMP Right.

DMP I timed a 360 rotation on it. Looked like about 6 degrees a second from what I could judge it.

CC-H I'm sorry. I couldn't copy that last.

CMP I timed a 1 - or a 360 rev on the thing, and it looked like it was doing about 6 degrees a second.

CMP That was really pretty.

CC-H I'm - I'm sor- - You guys are down so soft, I can't [sic] hardly hear you.

CMP It was really a pretty sight, seeing it tumbling off toward the ocean. I might add that - was the - the clouds on the surface of the ocean were so bright that it was impossible to see the - anything in the COAS. So that sort of substantiates the problem that Deke and Tom had with the COAS during docking.

CC-H Okay. Understand that. And, Vance, I copied from the way you saw it - it looked - did look like it was turning about the one axis that we had - we had wanted. And that - didn't appear to be any tumble to it.

CMP That's right. It looked to be stable and in a - tumbling about one axis. The one we wanted.

20 10 55 CC-H Okay. Very fine. Super.

20 11 47 CC-H Apollo, Houston. We're looking at some data down here that shows circuit breakers on panel 27⁴, for the DM FURNACE/CRYSTAL GROWTH are closed. We would like to get those opened, if we could, please. If you can reach them. We're about to go LOS, and then we'll have you again at Newfoundland in 5 minutes.

20 18 04 CC-H Apollo, Houston. AOS Newfoundland, 7 minutes.

20 18 17 CC-H And if you gents find a chance to get those ATS angles, a pitch of minus 58 and yaw of 33⁴, we'll be able to get you on the ATS and watch you burn.

DMP Yeah. I had them in there. I hope you got it.

CC-H Okay, fine. Well, we're not quite there, yet. Thank you, Deke.

20 18 30 DMP Okay. That 27⁴ breaker I can't get at.

CC-H Understand.

ACDR Houston, Apollo.

CC-H Go ahead.

20 22 47 ACDR Okay. Burn was on time. And residuals were nulled to 0, minus 1, and 0. The delta-V_C reads minus 18.0.

CC-H Roger.

CC-H Sounds super.

CC-H And, once more, a little warning enroute to this vis obs attitude, again, which I corrected earlier. That R2 for your vis obs is 6000 by 7 - 9000, and watch out for gimbal - -

ACDR Roger.

CC-H - - lock enroute.

ACDR Okay.

20 23 50 CC-H Okay. And one other item here. You guys are doing such a super job up there. Farouk was real impressed by some of the TV stuff that you got out of the window while we were doing docking scenes earlier. And we don't know if it's going to be possible - depends on how long it takes to get out of your suits, but you've got a vis obs pass upcoming at about 200:50 - 200:52, and if we can, we're going to - we'd like to get the TV set up via prep 2.9. And I could read that to you, or however you want to do it. And - so we can have TV out the window when you're doing it. And that's kind of your option, whether you think it's possible.

20 24 32 DMP Okay. We'll try her.

CC-H Okay. If you think you're going to make it, let me know. There're a couple of modifications we're going to have to make, just minor ones, in that that camera is going to be in MASTER and your prep tells you that it'll be in SLAVE. And we need to get the INTERLEAVER switch ON and a few other things. We'll wait until you get out of the suits, and get squared away, though.

DMP Okay.

DMP Tell you, I think we've got all of our cameras stowed for entry right now, as a matter of fact.

CC-H Okay. Understand.

DMP When we cleaned out the DM this morning, we went through that whole exercise. We might be able to dig something out again in time. We'll work on it.

CC-H I'm sorry, Deke. I couldn't catch your last.

DMP I said we've got it all stored. We may be able to dig something out in time and put it back together. We'll see how it goes here.

CC-H Okay.

20 25 36 ACDR Okay, Crip. Can we go ahead and start maneuvering to the vis obs attitude now? Says by 2 -

CC-H That's affirmative. The sooner you get started, the better.

20 25 46 ACDR I'm on the way.

CC-H If we potentially lose lock enroute, we need a small modification on that angle. That's in your Flight Plan; yaw is 116. That's pitch of minus 62 and a yaw of 116, in case we lose locks in the maneuver.

20 26 16 ACDR Roger. Have 116 in yaw.

END OF TAPE

Day 204

TAG Tape 204-12/T-107
Time: 204:20:30 to 204:22:00
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

20 33 37 CMP Houston, Apollo.

 CC-H Go ahead.

 CMP Okay. You stayed with us during the maneuver. Just checking.

 CC-H Yeah. We wouldn't run off and leave you. We weren't positive you heard that was why - wanted to mention the angles to you. But we're still here.

 CMP Roger.

20 35 26 CMP Incidentally, we have a minor malfunction in the orb rate apparatus there to report to you. The ball 1 sometimes does not flip to ORB RATE when you move the ORB RATE FDI [sic] 1 ORB RATE switch.

 CC-H Okay; it's a common intermittent device - malfunction, rather. It works sometimes and does not work at others. Is that correct?

 CMP Well, it's sort of that way. It generally doesn't work. But once or twice we got it to work correctly; and then once or twice it changed, but it did not change to the right position. And this was not evident on ball 2. So we used ball 2 to get it - the DM off. We just restricted use of ORDEAL on ball 1.

20 36 20 CC-H Okay. Understand that. That was smooth thinking, moving over to the other ball.

 CMP We would have reported it sooner, but we were kind of busy just before getting the DM off, and we weren't too worried about it because we had time for a backup.

 CC-H Yeah, that's good. And appreciate you being busy there. You worked through that nice and smooth.

 CMP Thank you.

 CMP Houston, Apollo.

 CC-H Go ahead, Vance.

20 38 03 CMP Crip, a little while ago you called for us to - to do something with a circuit breaker on 274, and we were all suited - couldn't get down there. Now Deke's down there and wonder - would like you to have you repeat what you asked him.

CC-H Okay. It looks like - it's on 274. It's the DM FURNACE/CRYSTAL GROWTH, the circuit breakers. There are three of them, and they should be OPEN.

CMP Okay.

20 45 54 DMP Crip, how do you read?

CC-H Loud and clear, Deke.

DMP Okay. I'm out of that old suit. If you got any data for me on this mapping pass, I can take it right now.

CC-H Okay. I guess two items. The - if - do you think you've got time to try to find a TV camera to put in the window?

DMP Well, I'm going to try to take time to do it. If you can just tell me what you want, I'll do the best I can on it.

20 46 19 CC-H Okay. We're recommending that if you can find your cue card there, that you use TV prep 2.9, which is one of the ones we used for a tour. And it basically works on 605 there. The only modification to that - that camera does have to be in MASTER, not SLAVE as called for. We're also going to have to get the INTERLEAVER POWER ON, down on 400, for the VTR.

DMP Okay.

20 46 55 CC-H And - and we'll have to take the CM 2 TV STATION POWER to ON also.

DMP Okay, got that.

CC-H Okay. One item I might also tell you, since this target down there is of the Anzus Eddy. We've had a ship spot it recently, and it's reported that there is a large cumulus cloud just about over the center of the eddy, and it's slightly southwest of where it's indicated in your - your book there.

DMP Okay. Thank you.

20 47 37 CC-H Other than that, might as well get cracking and see if we can get some TV of it. I'll - -

DMP Okay.

CC-H - - Won't bother you any more.

20 53 38 CC-H Apollo, Houston. We're about to lose you here through the ATS, and we'll see you again at Orroral in about 18 minutes.

CMP Okay, Crip. Looks like we're going to get the TV camera set up and I think we're proceeding very well.

CC-H Great. If you do, we're going to also not only look at that eddy area, but when you come across Hawaii, we're going to be looking at that one. I was going to give you some words at Orroral, Vance, regarding eddies. We've had a lot of them reported southwest of Hawaii, and we were going to get you to look at them and try to give us a - size, number, and extent, and that kind of stuff.

20 54 21 CMP Okay. Pacific Ocean - Ocean's just - -

21 10 34 CC-H Apollo, Houston. We are AOS through Orroral for 4 minutes.

DMP Okay, Crip. And we got the TV camera up and running.

CC-H Okay, great. We're talking at you on VHF now. As soon as we lock on with S-band we're going to go ahead and command in that camera ON.

DMP Okay.

DMP ...

CC-H Go ahead.

DMP ...

CC-H Sorry you're unreadable, way down in the mud.

21 12 39 DMP ... say we're concerned whether we got the right configuration here to give you the TV you're looking for.

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CC-H Okay. We've got it. It's - it's coming down. We're not getting to look at it here, we're just dumping it to the site so we can get it later.

DMP Oh. I see. Okay. But the site does have it there.

CC-H That's affirmative.

DMP Okay.

DMP Where are we right now, Crip?

21 13 09 CC-H I'm sorry. You're just over the - the coast of Australia right now.

DMP Okay.

CC-H Should be getting pretty close to Sydney there.

DMP Well, okay, Crip. We're over where we think we ought to be, about Sydney, and we're in solid cloud cover here right now.

CC-H Yeah. Kind of hard to pick a cumulus cloud out amongst all the clouds then, huh?

DMP Right.

CC-H Okay. Copy that.

21 14 54 CC-H Like to give you this quick blurb regarding the eddies I mentioned earlier south of Hawaii. It's known to have a series of eddies southwest of the Islands due to the current flow being broken by the Islands. And the size, and the number, and the extent of them are unknown. We'd like you to attempt to observe the orientation, the sizes, and how many you can see. You should have a chance to look at them on this upcoming pass across there at about 201:09. And we think it should be visible out of window 1.

21 15 28 CC-H We're also going to be, again, not beaming down this TV to Hawaii when we - when we come across there. So we can look at it later. We are 1 minute from LOS, and our next station contact will be at Hawaii in 14 minutes.

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Page 5

21 28 55 CC-H Apollo, Houston. Hello at Hawaii for 6 minutes.
How you doing?

DMP Okay, Dick.

CC-H Hi, Deke.

DMP Yeah. We're cruising along here looking for eddies,
and we shot a few pictures of some of the same kind
we've been seeing right along.

CC-H Roger. Is the weather up there any better than it
was down around Australia?

21 29 15 DMP Yeah, it's pretty clear over most of this area, and
scattered clouds that just outline the eddies. In
fact, we've got a couple super big ones coming up
on our right, right now - at 201:07:25.

CC-H Roger.

DMP Are you guys getting TV of this, incidentally, Dick?

CC-H I'm sorry, Deke. Say again?

DMP Are you guys getting TV, or are we just putting it
on tape?

CC-H We're not getting it live, Deke. I think we are
dumping it down to the - the Hawaii tracking station,
and the station reports that they are receiving it.

DMP Okay.

21 30 24 CC-H And incidentally, this is - you're very close to being
right overhead your splashdown point. This is
the - just about the same sort of ascending rev that
you'll be coming home on, tomorrow.

DMP Okay. If the weather's like this tomorrow, it'll
be super.

CC-H I'm sure it will be. That's the way we scheduled
it, anyway.

DMP Yeah. You guys have good control of things down there,
we've noticed.

CC-H Darn right.

21 30 53 CMP This eddy Deke just called out's about 50 kilometers across.

CC-H Roger, Vance.

DMP Say, a question for Farouk on the eddies. Do they want stereos of that? We're kind of getting little short on film, but if they need stereos, fine, we'll shoot it up. But if the stereo doesn't do much for them, we might as well save the film.

CC-H Let me - let me check real quick. Hang on.

DMP Okay.

21 32 45 CC-H Deke, Houston. We did talk to Farouk in the backroom, and he says he would like some stereo photography of the eddies.

DMP Okay. You got a million eddies out here, and - -

CC-H Rog. He says, Deke - he gives the advice to pick out one good-looking site and get good stereo of that and not try to document the whole area, Deke.

DMP Okay.

21 34 16 DMP And it looks to us, for Farouk's information, like we're almost running parallel with a large ocean current, here. The cloud banners on both sides and the clouds within it look a good deal like a Gulf Stream type current.

CC-H Roger, Deke. Copy.

21 34 31 CC-H Apollo, Houston. We are 1 minute to LOS. Newfoundland comes up at 201 plus 28. I do have one note for you. Back to that ORDEAL problem that you had, I don't think you're using it anymore, but we would recommend that you select INERTIAL on the ORDEAL FDAI number 1 switch and discontinue trying to use it with FDAI 1. It turns out that there are some potential failure modes caused by contamination in that switch that could cause the loss of that ball. So give up on it and stay on number 2.

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21 35 07 CMP Okay. Understand. From now on, we don't use FDI [sic] 1 for anything, then.

CC-H Well, don't use the ORDEAL on FDAI 1. That's what I mean.

CMP Oh, okay. Yeah.

CC-H Yeah. The ball is okay now.

CMP Right.

21 35 19 CC-H We just don't want to change that. (Laughter)

21 50 27 CC-H Apollo, Houston. Newfoundland for 7 minutes.

21 52 48 CC-H Apollo, Houston.

DMP Go ahead, Houston.

CC-H Roger. It turns out, because of this different pitch attitude on the P20 for this - that we're in for the Earth obs - we are going to be able to acquire the ATS right now, if anybody will give it a try. The angles that are printed over there at a time of 201 plus 45 we think will be good. And we'll lose it, then - maybe 5 minutes earlier than it's printed in the Flight Plan. But we think if somebody has a chance to try, we should be able to lock up.

DMP Okay, 201:45, Dick.

CC-H Okay.

DMP Okay, Dick. ... now on ATS?

21 54 21 CC-H Roger, Deke. We'll inhibit the Newfoundland VHF and be talking to you through ATS. Thank you a lot.

DMP All right.

ACDR Houston, Apollo.

CC-H Go ahead, Tom.

21 54 46 ACDR Yeah, hey, if this TV comes out - I was wondering, you know, we - so - we used so much film that you can budget to shoot. As far as what it looks like, you

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know, from space, looking down on the Earth - and most of the time, like Skylab, those guys very seldom had, you know, a local horizontal attitude. But if you put on a tape recorder, you got some good passes coming up, like the United States. Why don't we put it on TV, on the VTR, then you can dump it? I think it'd be pretty fantastic what you see. Over. Just something for you to think about.

CC-H Okay, we have - we have been talking about some - some about that on the ground, Tom. And we'll talk about it some more and get back to you.

21 55 23 DMP Yeah, you know, just as a "for instance," we just came off this Pacific pass and kind of all climbed back in the cockpit, and all of a sudden looked out the window, and man, we're dead center over Seattle and the most clear day I've ever seen there. And nothing running. The TV was running, but it didn't go anywhere, I don't think.

CC-H Roger. Understand.

21 56 33 CC-H Apollo, Houston. We have no further scheduled use of the VTR. As far as we're concerned, you can use it for out-the-window passes of the U.S. or other clear-area targets of opportunity, and we'll either dump it, or we'll bring it home full.

DMP Okay. Super.

CC-H Great.

DMP Incidentally, I did - scramble and get a camera and get a few shots of that area. But it wasn't planned very well.

21 57 06 CC-H Okay. Well, I tell you what. Your next couple of revs are going to pass right over that same general area again. So, as you come across it, you probably can get - get another chance. Of course, we may be - -

DMP Yeah, right. We noticed that.

CC-H Okay.

DMP You bet you. Thank you.

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CC-H Okay.

21 57 09 DMP Hey, we sure do miss our old utility outhouse up here.

CC-H I'm sorry, Deke. Say again.

DMP I say, we sure do miss our old utility outhouse up here since we jettisoned it.

CC-H Roger.

DMP I think I better twist the words; it'd be the back-porch - -

CC-H Roger.

DMP - - ... it for about everything you can imagine.

21 58 18 CC-H Rog.

END OF TAPE

Day 204

TAG Tape 204-13/T-108

Time: 204:22:00 to 204:23:30

Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

22 07 25 CC-H Apollo, Houston. For Vance. Vance, if - when you get a chance, if you could get out the Earth Obs Book and look at site number 4, I've got a note here I wanted to pass up to from Farouk about this upcoming Earth obs pass.

DMP He's not on comm right now, Dick.

CC-H Okay. There's no - -

DMP How much time we got?

CC-H Oh, we got lots of time. I got another 35 minutes in this ATS pass, Deke. I've also got a suggestion from Farouk that you ought to take just as that for this TV out the window, ground TV for the VTR. Some times that - -

DMP Okay.

CC-H Okay. If you've got a pencil, Deke, I can give you some on/off times for the VTR, which would get a daylight pass starting at Australia, going up to cover the area where the eddies are, and then turn it off over the clouds over the Pacific, and start it again over the - around Seattle, and then let it run to completion.

DMP Okay. Stand by 1, and I'll copy her.

DMP Okay, Dick. I'm ready.

22 08 47 CC-H Okay. VTR on at time 202 plus 21, VTR off at 202 plus 33, VTR on at 202 plus 47, and then this proposal would just run the VTR until it's out of tape, and turn it off at 203 plus 05.

DMP Okay. Copy that. 202:21, on; 202:33, off; back on at 47, and off at 05, or when we run out.

CC-H Okay. And just take that as a suggestion. If you see a better way to run it, or something out the window you'd rather - rather take, anything would be fine with us.

DMP Looks good here. Thank you.

22 19 49 CC-H Apollo, Houston. We're going to be losing ATS on this pass in about 6 or 7 minutes. I've got one Flight Plan update and also wanted to talk to Vance about this upcoming Earth obs pass.

CMP Okay. Go ahead, Dick. I just came *** the headset.

CC-H Okay, Vance. I wanted to pass up a note to you from - from Farouk, and it might help if you were looking in the Earth Obs Book at the picture - the site 4 page in there.

CMP Stand by 1.

22 20 26 CC-H Okay. And, also, the - I do have a Flight Plan update for somebody to copy on - at 203 hours and 10 minutes.

DMP Okay, Dick. Ready for the Flight Plan change.

CC-H Okay. We want to change that VERB 49 maneuver to the DM attitude to read as - to the following angles: 001, 143, 356. I also want to change the high-gain angles to read plus 35 and yaw 262. Over.

DMP Okay. Copy. 001, 143, 356. And ATS through - oops! - plus 35 and a 262.

22 21 45 CC-H That's right. You'll notice we had the sign wrong on that pitch, and that was the main reason for the change. Also the difference in the VERB 49, slightly. Thanks, Deke.

DMP Okay. Thank you.

CMP Okay. And I'm ready to copy whatever you've got from Farouk - -

22 22 03 CC-H Okay, Vance. It turns out that we have another candidate site for sea farming from - from Captain Cousteau. And it's the body of water north of Puget Sound there. And if you look on that little map, it's - it's generally that body of water to the west of Vancouver. And you'll be passing on rev 124 to the north of it. And when looking at site 4A, you'll be looking right down the Sound there, and - or right

down the body of water looking at site 4A. It's the water that separates Canada from Vancouver Island, and it should be visible from command module window 1 at the same time as site 4A is visible. And if you have a chance, he'd like to get a color-wheel reading of that water and some photos, if you have the film to do it. The reason it's a good site for farming is that the current there is - runs adjacent to the coastline but does not get - does not run through that inland - inland water there. So the water's fairly still, and the texture of it should be fairly smooth. Over.

CMP Okay. Is that known as the Strait of Georgia?

CC-H I'm not - it - the Strait of Georgia in that area - is in that area but - Yes. That's affirmative, I'm - I'm told, Vance. That - that body of water there is the Strait of Georgia.

22 23 38 CMP Okay, and - more or less along the whole length of it, or would you suggest the south end more than the north, or what?

CC-H I - I think the whole length, because the - because the water generally in there is still and doesn't have a current running through it. I think just about anywhere in there would be good. I think probably your best chance at getting a color-wheel reading, though, might be where you have a little more water down towards the south end. But, at any rate, there won't be much time to look down there; and so, do the best you can.

CMP Okay. So photos, not necessarily stereo, but more or less to cover the Strait of Georgia series, and a color-wheel reading of the water there.

CC-H That's affirm. Real fine. Thanks a lot.

CMP Sure enough.

22 25 33 CC-H Apollo, Houston. We're about 1 minute from LOS. We'll be seeing you again when we -

23 23 27 CC-H Apollo, Houston. Hello at Bermuda. How are you doing?

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ACDR Just super, Dick. We're sitting here observing the good old world from a beautiful vantage point.

CC-H Roger. Is the East Coast pretty today? It's been kind of cloudy down here.

ACDR It's been pretty cloudy in most of the area here, but - we're coming into a clear area right now.

CC-H Roger.

DMP Yeah. We can see Long Island.

ACDR In fact, Dick, we just passed over Manhattan.

CC-H Roger.

23 24 06 DMP For Farouk's info, we saw a super circulation pattern off the west coast. Got a kind of panorama. It was so big you - couldn't get it into two camera frames. I wouldn't have any idea of how big an area it covers, but it looks like a super big hurricane, except it wasn't all that dense.

CC-H Roger. Understand.

DMP Yeah.

CMP It was sort of a ring of clouds, I guess you'd say, rather than a hurricane. When we got to Seattle, we were too far north of Seattle to see it. And there were clouds over Canada, but we did pick up some glaciers, see some fern lines on Canadian Rockies - glaciers. And Lake Superior was clouded over completely.

CC-H Roger, Vance. Got it.

23 25 21 CC-H Apollo, Houston. I don't want to stop your view of the United States, but when you get out over the ocean there, or at your convenience, I'd like to get the P52 data. And, also, I'd like to get somebody, when they have a chance, to read the four numbers A, B, C, and D on the Doppler tape recorder assembly. We're still interested if that second recorder has moved.

ACDR Roger, Dick. And we're going to go ahead and get the VTR off and go to VERB 49 for the next maneuver.

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TAG Tape 204-13/T-108
Page 5

CC-H Okay. Fine.

ACDR Houston, Apollo.

CC-H Go ahead, Tom.

ACDR Okay. Here's the IMU data. NOUN - first star is 07; second, 04 - -

CC-H Break. Tom, Houston. Could you stand by. We're getting a bad echo. Let us reconfigure so I can understand you.

ACDR Okay.

CC-H Apollo, Houston. Tom, try it again, please.

ACDR Roger. How do you read?

CC-H Loud and clear. Go ahead.

23 27 38 ACDR Okay. 07 and 14 were the two stars. NOUN 05, all zeros; plus 05.9; minus 63; plus 23; platform torque, 202:08:45. Over.

CC-H Okay, Tom. Copy. Thank you very much.

ACDR Okay, Houston. How do you read?

CC-H I've got a real loud scratching noise on the downlink, Tom, but I can hear you. Go ahead.

ACDR All right. ...

23 29 39 CC-H Apollo, Houston. I'm sorry. I can't understand you at all. We're going to have to clear up this noise on the downlink. Stand by.

END OF TAPE

Day 204

TAG Tape 204-14/T-109
Time: 204:23:30 to 205:01:00
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

23 30 20 CC-H Apollo, Houston. We're about 30 seconds from LOS at Bermuda. We'll see you when you get locked up on the ATS. ...

23 31 02 CC-H Apollo, Houston. How do you read?

DMP 5 by, Dick.

CC-H Okay, Deke. We had a real loud noise when we were going over the hill there at Bermuda, and I didn't copy any of what Tom had passed down to me.

DMP Okay. Stand by 1. We'll get it for you.

CMP Okay, Dick. Recorder readings we copied down as follows, at 203 hours and 7 minutes. A is 12; B is 13; C is 11; D is 12.

CC-H Okay, Vance. Thanks a lot. Appreciate it.

CMP Right.

CMP And we'd be curious to know if that's a - if those are reasonable readings, if the thing's working.

CC-H Well, I think INCO is checking it now. Looking at his past data, it looks like we may still be having problems with that second recorder. However, it doesn't - it doesn't really matter because, as long as one of them is working, we're meeting our objectives.

23 32 15 CMP Right.

23 35 50 CMP Houston, Apollo.

CC-H Go ahead, Vance.

CMP Okay, Dick. Here we are in the Flight Plan at a place where we're doing preliminary stowage. Just curious to know if you want us - to stow this TV camera now, or would like to keep taking advantage of getting some TV of the orbit?

CC-H Vance, our plan now - You've just about filled up the VTR, or if you haven't, there's only a few minutes left on it, and we were not planning on dumping it. What we're planning on doing is - is bringing that home. So - so, in order to support that, I guess we can go ahead and stow it.

CMP Okay. We'll go ahead and stow it.

CC-H Okay.

23 37 50 DMP Houston, Apollo.

CC-H Go ahead, Deke.

DMP Yeah, we're taking film inventory here. It appears we're down to one magazine of 16-millimeter stuff. We're supposed to shoot the entry of the drogue deploy, and what we've got is color interior. Can somebody give us some reasonable settings so we can use that for exterior?

CC-H Yes. We'll look it up, and I'll get back to you.

DMP Thank you.

23 40 37 CC-H Apollo, Houston. I've got a DM2 final pad for you if somebody would like to copy - in the Flight Plan.

ACDR Okay, be right with you in a minute.

CC-H Okay.

CC-H And, Apollo, Houston. If you'll give us POO and AC-CEPT, we'll get you up a target load.

ACDR Okay, Dick, go ahead on the DM2 pad.

CC-H Okay, Tom. Are you hearing me loud and clear? I heard a - an echo there.

ACDR You're loud and clear.

CC-H Okay, fine. Starting with NOUN 33: 204:11:42.00; minus 019.7, plus four balls, minus 018.0; 000, 136, 355; 008.7; 00:01; 3.1; 18 - excuse me, that delta-V_C tailoff is 18.0.

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Page 3

ACDR Got it.

CC-H Weight, 25262; trims, minus 0.14, minus 0.76. Go ahead.

23 42 55 ACDR Okay, on the readback. 204:11:42.00; minus 019.7, plus all zeros, minus 018.0; 000, 136, 355; 008.7; 00:01; delta-V ignition, 3.1; tailoff, 18.0; weight, 25262; pitch trim, minus 0.14; yaw trim, minus 0.76. Over.

CC-H Roger, Tom. That's a good readback. And there on that other Flight - that facing Flight Plan page, I have one more thing for you. Right up there at the top of the page at about 204 hours, we want you to change the DAP to a VERB 48, and the two registers are as follows: 10102 and 01111. Go ahead.

ACDR Okay. DAP change at about 204 hours, be 10102, 01111. Over.

CC-H Roger, Tom. That's a good readback and a good pad. Thank you much.

ACDR All righty.

CC-H And, Tom, the computer's yours. You can go back to BLOCK.

23 44 23 ACDR Have it in BLOCK.

CC-H Okay.

23 50 00 CC-H Apollo, Houston.

CMP Go ahead.

CC-H Vance, just a minor point, there. A few minutes before the burn in the Flight Plan, it's printed in there to get the G&N POWER OPTICS on. Since we've had - we've had such a series of real good P52's, we didn't give you a burn attitude check, and that POWER OPTICS on was assuming that you would have one, and that's why it's in there. No problem.

CMP Okay. You're saying, Dick, that's the next DM2 burn that we can leave that switch OFF?

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CC-H That's affirmative.

CMP Because we won't have an optics check, anyway?

CC-H That's affirmative.

CMP Okay.

CC-H Okay.

23 59 54 CMP Houston, Apollo.

CC-H Go ahead, Vance.

00 00 00 CMP By the way, you know we have a - I don't know if this has been called down or not, but we have in the Flight Plan Supplement that special binder - need to try it out for Shuttle?

CC-H Roger.

CMP And we had to open it and take pages out and put them in, and had only one comment. It isn't too bad, but it's a little more complicated than the kind of binder you used when you were in high school. The one they used in high school had two tabs that you could press down to open it, which was - which was very handy. This one has a couple of slide devices that have to be pulled out, and it's a little more involved - less simple working it, I'd say. And so, the only comment in our evaluation is they might look at just using the standard high school type.

CC-H Roger. Well, the simpler we can get, I'm sure that's what we'll want to do. And we'll pass that comment on, and I'm sure they'll be interested to talk to you guys after you get home. Thanks, Vance.

00 01 06 CMP Okay.

00 04 49 MCC-H Go ahead.

00 04 53 MCC-H 475.

00 13 23 CC-H Apollo, Houston. For your information, we've been watching you load everything, and it looks real good. That - that DAP change that I gave you can be loaded really anytime. I gave you a time of - 204 hours, but if you want to go ahead and load it now, that - that'd be fine.

DMP Okay, Dick. We'll put her in.

CC-H Okay.

CC-H Apollo, Houston. We're about 2 minutes to ATS LOS. You're looking real good. We'll see you at Guam here at 204 plus 01, just 4 minutes from now.

CMP Okay, Dick. Very good.

00 19 22 CC-H Okay, see you there.

00 23 24 CC-H Apollo, Houston. Guam for 7 minutes.

CMP Okay, Dick. Loud and clear.

CC-H Roger.

CMP We're ready for the burn.

CC-H Okay, and we've been watching you here. You look real good to us.

CMP Okay. Real good.

00 28 50 CC-H Apollo, Houston. We're about a minute and a half from LOS. I'll call you at Rosman at 204 plus 32. You got four good gimbal motors; the trims are okay; everything's looking fine. We'll see you after the burn.

CMP Okay. Glad to hear it's looking good.

00 29 04 CC-H Okay.

00 54 21 CC-H Apollo, Houston. At MILA for 7 minutes. How do you read?

ACDR Reading you loud and clear, Dick. Burn went fine. The residuals were 0, minus 1, and plus 1. Over.

CC-H Okay. Real fine. And what was the EMS reading, Tom, after the burn?

ACDR Minus 18.0.

CC-H Okay. Super. Sounds like it was right on. Thank you very much.

ACDR Yeah. Roger. We're trying to go ahead and get ahead of things so that when - during nighttime, we'll get the leg measurements and some other - and ZFF and all that. So, when we come out in the daytime, we can do some more vis obs. Over.

CC-H Okay. That sounds great, Tom.

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00 55 07 CC-H And, Apollo, Houston. You'd be interested to know that we've got a good lock on the Doppler. Looking real good.

ACDR Hey, that's great. And also, the - on A and B, those reels are still turning, but C and D have not moved.

CC-H Okay. Thanks, Tom.

CC-H Apollo, Houston. We think you need to PRO on the 50 18 to get into the orb-rate attitude P20.

ACDR Stand by. Okay, we'll PRO.

00 59 49 CC-H Okay.

END OF TAPE

Day 205

TAG Tape 205-01/T-110
Time: 205:01:00 to 205:02:30
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

01 00 07 CC-H And, Apollo, Houston. We're 1 minute from LOS.
We'll see you when you get locked up on the ATS.

01 05 51 CC-H Apollo, Houston through the ATS. How do you read?

ACDR Read you loud and clear, Dick.

CC-H Roger, Tom. Me too.

DMP Dick, how do you read?

CC-H Loud and clear, Deke. Go ahead.

DMP Okay. Hey, I owed you a report here the other day on the old crystal growths, and I just got through taking another series of pictures into where I can see them. I would like to report that I don't see any crystals anywhere. We've got - bubbles, and three or four units, fairly good size, size of a pea or so; but I see nothing that I would call a crystal in any of them.

01 07 16 CC-H Okay, Deke. Thanks a lot for telling us again.

DMP Okay.

ACDR Okay, Dick. And now that we've got the TV on the VTR, just go ahead and turn the whole thing off; it will be recovered after landing? Over.

CC-H That's affirm, Tom. You can go - I was going to wait until presleep to remind you because I wasn't sure where y'all were on the tape. But when you've gotten what you want, just turn all three POWER switches OFF, and we can forget the VTR until we get it on the ground.

ACDR Okay.

01 12 31 ACDR Houston, Apollo.

CC-H Go ahead, Tom.

ACDR Yeah. Are you reading my DSKY?

Day 205

CC-H Yeah. Stand by just a second.

CC-H Yeah, Tom. I think I can explain what happened here. When you PROed on the P20, we were out of attitude and the rate was slow. And when you got to the attitude, it slipped out from under you again. What you need to do is PRO again on the P20, and we'll catch up with it. And we see - guidance - I'm sorry, looking at it, it's obvious you already have done that. So this time when we catch up, we should be squared away. And we're still locked up on the - -

ACDR Okay.

CC-H - - we're still locked up on the Doppler, so no harm done.

ACDR Okay. Are you receiving data down there besides getting it on the recorder up here?

CC-H That's affirm, we are. Well - -

ACDR Yeah, that's good.

01 13 41 CC-H Tom, let me - I'm not sure I understood your question. Let me clarify that. We are not receiving science data. We are receiving good spacecraft data and systems status, so we can keep up with you. But - but you've got the science data - data onboard, and we have a couple of parameters that let's us know that we're locked up. So, we're doing okay.

ACDR Real good.

DMP Dick, if things are quiet down there, I can give you a quick film inventory.

CC-H Okay, Deke. Can you stand by just a second. We're getting ready to change dump modes, and I'm going to drop out. I'll call you when we're back up.

DMP Okay.

01 15 49 CC-H Apollo, Houston. We're locked back up on voice. And I'm - Deke, I'm ready to copy on the film.

DMP Okay; just a second. Okay; here it goes. Okay. We got about 320 frames of 35 millimeter left, 140 of 70 for the silver camera, and about 180 for the

black over and above our mapping requirement. We have one mapping pass left, which we figure it will take 90 frames. And we only have one mag of 16 left, and that's an interior. We've already talked to you about that one. And that is it.

CC-H Okay. Let me read them back: 320 frames of 35 millimeter left, 140 frames of the silver 70, 180 mil - frames of the black camera over and above the mapping requirements, and one mag of 16 millimeter.

DMP That's affirm.

CC-H Okay, Deke. Thank you.

01 16 54 DMP And we will try to budget that so we won't run out too early and have to come home with no film.

CC-H Roger. That's the way to do it.

01 25 05 CC-H Apollo, Houston. Is Vance on the phone?

ACDR Yeah.

CMP Yeah, right here.

CC-H Hey, Vance, you know, y'all were talking - or any of you - y'all were talking while ago about the new book binder, and - -

CMP Right.

CC-H - - and it turns out that the principal investigator of that experiment is Dr. Theodore Guillory, who happens to be sitting here next to me, and he had a couple of questions he wanted to pass up.

CMP Okay. Gladly talk to Dr. Guillory.

CC-H Rog. The first one was, "Is the effectiveness of the system degraded when in P20 over the South Atlantic Anomaly or during venting?"

CMP Well, if you're venting waste water, no. Depends on what you're venting.

CC-H Okay.

CC-H He had one more. It says, "Did you notice any crystal redefinition when near the furnace or near Deke?"

CMP Yeah, we didn't think to melt it. We should have done that.

CC-H Roger. Okay; thanks a lot. I think he's got all his data now.

CMP Okay. (Laughter)

DMP That last one sounded like a dirty question, but I haven't quite figured it out yet.

CMP Roger.

01 26 36 CMP The old high school - high school notebook theory.

CC-H Roger. He did say, incidentally, that the reason that they - or one thought on that high school notebook thing was, is that most of the books that you have need to be - or in the past, we've always thought that they needed to be folded back on themselves and be able to be, you know, clipped with any page open. And that was one of the reasons that they had gotten a little more complicated.

DMP If you'd like one very scientific comment on the books, that new cover that's orange, strawberry, and pineapple just looks better than the old ones.

01 27 18 CC-H (Laughter) Okay.

CMP That reminds me. It's about time to clean the salmon oil off the side window - on the left here.

CC-H Roger.

01 29 20 CMP Just a medical comment here, Dick.

CC-H Roger. Go ahead.

CMP The last burn was very short, but very violent, as usual, and - or it seemed that way - and we had a suit bag temporarily stowed in the tunnel and had forgotten about it. And it almost broke both of Tom's legs when it came down.

CC-H Roger. Understand. I'm glad it didn't. I remember, during Skylab, Joe Kerwin talking about doing some of those burns standing - standing up down there in the LEB - LEB.

CMP That's a new thought - to see if a guy could stand 1-1/2 g after a week of zero g.

CC-H Yeah, but we all know what happened to Joe Kerwin, so we'd just as soon you all would sit down for the next burn.

CMP (Laughter)

01 44 02 CC-H Apollo, Houston.

ACDR Go ahead.

CC-H Yeah. We've had such good luck with the platform and doing the P52's, and seeing how we figure that you're going to be spending most of these daylight passes looking out the window and doing Earth observations, and you might want to spend the night pass during eating. It's your option, but we'd be satisfied if you just skip this next - upcoming P52 here, and we'll get one after you wake up in the morning.

CMP Okay. Sounds fine.

01 44 36 CC-H Okay, Vance. Thanks.

CMP That's really a super platform, isn't it? I can hardly believe the small errors it has all the time.

CC-H It sure is. And I guess you know this, but that's an Apollo 14 platform. It went to the Moon and back.

CMP I guess it was an Apollo 14 probe too, isn't it?

CC-H Yes. It was.

CMP That worked good.

01 45 00 CC-H As - as a matter of fact, I - I'm corrected by Terry Watson. The - the probe was Apollo 14. The IMU was - The platform went to the Moon the last time, on Apollo 17.

01 58 01 CC-H Apollo, Houston. We're 2 minutes from ATS LOS.
We'll see you at Goldstone in about 20 minutes.
See you there.

CMP Okay, Dick. Incidentally, we were just commenting -
this is not - this is a sure good attitude for the
Doppler experiment, but we kind of need a periscope
for Earth obs.

01 58 18 CC-H Roger. FAO was sitting here thinking the same thing,
probably.

02 21 33 CC-H Apollo, Houston. AOS at Goldstone for about 4 min-
utes, and about 2 minutes into the pass, we will
have a keyhole of about 45 seconds.

ACDR Roger.

ACDR Dick, we saw a huge weather cycle out in the Pacific
at a GMT of 205 plus - plus 56. It's built upon the
edges; it's down - it tapers down in the center; it's
got just a round - really an open center. But it
looks - and it's circulating. You can see the whole
circulation. It's probably 150 miles in diameter.
You might want to check it with Farouk and the weather
people. Over.

CC-H Roger, Tom. We certainly will. Sounds like you got
a better view of it this pass than you did last time.

ACDR Right; I think so. The only thing we - only time we
can see now is just out of window 1 in this attitude.

CC-H Roger. Understand.

02 23 57 CC-H Apollo, Houston. In about 50 seconds, I'm going to
drop into a keyhole, and I'll call you when I climb
out.

ACDR Okay.

02 25 04 CC-H Apollo, Houston. I'm back up. We're about 30 seconds
from LOS. I'll give you a call at Quito in 8 minutes.

02 25 10 ACDR Okay.

END OF TAPE

Day 205

TAG Tape 205-02/T-111

Time: 205:02:30 to 205:04:00

Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

02 33 15 CC-H Apollo, Houston. Quito for 6 minutes.

CC-H Apollo, Houston. Quito for 4 minutes.

CMP Loud and clear, Dick. How do you read me?

CC-H Roger, Vance. Stand by 1.

CC-H Vance, Houston. Are you reading me loud and clear? I thought I heard an echo there.

CMP Yeah, we read you earlier and you apparently didn't hear us.

CC-H Okay.

CMP ... then. We just heard you then.

CC-H Okay, incidentally, since we went LOS up there at Goldstone, we got weather up in recovery to show us the satellite picture that - of the cloud formation that you saw. For your information, there's a big lull located right in the center of the circulation pattern, and on the - let's see, the eastern edge - the leading edge of the cloud pattern that's close to the western coast of the United States is a cold front. So the cloud characteristics - it just turns out that the cloud characteristics of the weather pattern look like a tropical storm but, of course, that's not what it is.

CMP Okay. Well, I'm glad it isn't. It's just that it would be in kind of an odd place for a tropical storm anyway, I guess.

CC-H Rog. Well, we - we do have a satellite picture of it, and it certainly looks like one, and it's - covers a tremendous area.

CMP Yeah, we were impressed by the spiral arms on it.

CC-H Roger.

02 37 56 CC-H Apollo, Houston. We're 1 minute from LOS. I'll give you - we'll be talking to you again when you get locked up on the ATS. And if you guys are eating supper and would like to hear some news, I have a little bit for you when we get to the ATS.

CMP Really would. Very good, Dick; whenever you're ready.

CC-H Okay, when we get locked up on the satellite, I'll have it for you, Vance. The EECOM - Charlie Dumis and his EECOM friends back in his staff support room really outdid themselves tonight. We had standing rib roast and all the trimmings.

CMP You mean Charlie's serving again, huh? I thought maybe the GNC's would be serving tonight. Terry Neal with the chef's hat on or something.

02 38 39 CC-H I - I'm not sure how this happened, but Charlie has been treating us every night.

02 43 33 CC-H Apollo, Houston through the satellite.

DMP Okay. Read you 5 by, Dick.

CC-H Roger, Deke. And if y'all are interested in some news, I have it here.

DMP Great. We're standing by.

02 43 47 CC-H Okay. President Ford said today the United States is earnestly seeking progress in easing Middle East tensions, but cautioned it might not work. Address - addressing delegates to the American Legion's annual Boy's Nation in the White House Rose Garden, Ford said the differences are still very serious in the search for a new interim agreement between Egypt and Israel. The Senate lead - leadership has abandoned further efforts until September to break the deadlock over the contested New Hampshire Senate seat. "It is off," majority leader Max - Mike Mansfield, Democrat of Montana, said today when reporters asked if the Senate would take up the election dispute again before an August recess of Congress. Florida laymen have broken up a bee-rustling operation in which they say thieves harvested nearly \$500 000 in honey by switching brands on stolen hives. Beekeepers from

seven south Florida counties were busy Wednesday picking out their hives from nearly 1200 recovered in a Tuesday raid on a quonset hut honey factory in a rural area of Palm Beach County. All the beekeepers have their own brands on their hives. Some of them know their stock so well they can identify the bees themselves, said Sergeant James Greer of the sheriff's department. Officers from nine state and local enforcement agencies were involved in the raid on one edge of Palm Beach County, center of the 30-million-pound-per-year honey production. In the state, beekeeping is a 10-million-a-dot - 10-million-dollar-a-year industry. In sports, last night the Astros lost a 2 to 1 decision to the Montreal Expos. Pretty Susan Jerns of Houston won her seventh title as a style jumper in the women's division of the National Parachute Association meet in - in - Tom, you'll have to pronounce this one for me. Tollequah [sic], Oklahoma, I think it is. What is it? Tellequa [sic].

ACDR

How do you say that? Tahlequah.

02 45 52 CC-H

Tahlequah. Okay. I learn something every time I come over here. Professional football is just a few weeks away. The Oilers are in full swing at their training camp in Huntsville. The word on the player/management dispute is that the teams will start the season on time, but they're still deadlocked at the bargaining table over several issues. There are predictions in Athens, Greece, that over 90 000 fans will turn out to watch a U.S. all-star basketball team play a Greek team in an outdoor stadium. And Muhammad Ali and Joe Frazier are already drumming up business for their October first title match in Manila. Ali says his routine will defeat Frazier and Frazier says it's an invitation to a bombing of Ali. You guys are still in the news, and there's a whole lot of interest in your splashdown tomorrow. Deke, your Aunt Sadie Link in Wisconsin made the headlines today. She was talking with - by telephone from up - from up there, and she said she was ready to go into space herself anytime. Her statement came in response to a question put by reporters after the in-flight news conference when you remarked you thought your aunt in Wisconsin could come up and do this job physically. She also said that she couldn't remember you as being particularly interested in flight as a boy, but, "I guess that came

after he got away to school," she said. Incidentally, bef - while ago I talked to all of your homes, and everybody's doing real fine and very excited about the splashdown tomorrow.

ACDR Well, I thank you very much, Dick. Appreciate that.

CC-H Incidentally, speaking of the - -

DMP ...

CC-H Yeah, go ahead.

DMP Just saying my Aunt Sadie didn't disappoint me. I expected fully she'd be ready to come.

02 47 54 CC-H (Chuckling) Roger that. Incidentally, when you guys splash down tomorrow, it will be within about 4 hours of 6 years from the splashdown of Apollo 11. And at the end of your mission - I thought we'd pass up a little data to you - At the end of your mission, the United States will have collected 22 468 man-hours in space. That's over 2 years. You make 43 astronauts we've flown in 31 flights and, in total, we've chalked up 30 - 3422 manned revs of the Earth. Might also point out that when we saw these figures we decided to - to get some figures ourselves. And so the - Neil Hutchinson asked the Silver Team, just the guys working here on the consoles tonight, to figure up how much flight control experience that we have, and I'm talking about people out here in the frontroom and just people directly supporting us in the staff support rooms and over in the MMR, not, of course, including all the other people that work on the space program. But it turns out that - that we have actually, of the people here tonight that you're talking to now, we have collected 122 838 hours of flight control experience during manned flights. And that's 14 years. And assuming the other two teams are of similar experience, that's 42 years. And, incidentally, Deke, I know you've been in the program a long time, but our network controller tonight first controlled Al Shepard on Mercury Redstone 1.

02 49 34 DMP Outstanding; glad he's still there.

CC-H That's right - -

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TAG Tape 205-02/T-111
Page 5

DMP Give him my regards.

CC-H So are we, Deke.

DMP I didn't know there was anybody left as old as Al Shepard.

02 49 58 CC-H Well, as a matter of fact, when we total up the - when we total up the numbers, it turns out that for the first two - He controlled the first two Mercury missions. There's another fellow here that - that came onboard for the third and fourth one; another one came up - came onboard for the fifth one, and by the time we flew the last manned Mercury mission, we had four guys that are still here tonight right now, helping control you guys. So we don't give up easy, just like you.

DMP Super.

CC-H And, incidentally, Deke, our INCO said that he worked for Wilbur Wright.

DMP (Laughter)

CC-H You can gu - you can guess who the INCO is.

DMP Yeah.

ACDR Is he still wearing those sporty boots he had on?

CC-H I can't see that well down there. I'm not sure.

CMP I didn't know the Wright airplane had a radio in it.

CC-H (Laughter) Roger.

CC-H Ed started with semaphores, Vance.

DMP Tell him - Tell him to stick around for another 5, and we'll take him for a ride in the Shuttle.

CC-H Okay.

02 51 36 DMP Give you a chance to get up here and look down for a change, instead of yakking down there, Dick.

CC-H I'll drink to that.

DMP So will we.

02 57 20 DMP Dick, you still with us?

CC-H Sure am. Go ahead.

DMP Okay, just sitting here thinking about experiments - things we might not have given you any information on. The old fish this morning had a slight mortality rate for the first time. We lost three out of one package overnight last night. Just thought I'd better let somebody know that so that they didn't get all uptight if they discovered it when we landed and thought it happened in reentry.

CC-H Roger, Deke. Thanks much. I got it.

CC-H Apollo, Houston. If you'll give us ACCEPT, we'll - get your loads up for the evening.

03 01 16 DMP Okay. You got it.

CC-H Okay. Thank you.

03 14 43 CC-H Apollo, Houston. We're through with uplinks. The computer is yours; and, when you go to BLOCK, you might - after that you might go ahead and give us a VERB 74 for the evening dump.

CC-H Apollo, Houston. We have about 20 more minutes here in this ATS pass. We're planning on - what we'd like to do is clean up all our evening stuff here. And we'll give you a call at Goldstone, and we'll make that the last call of the evening. That's about 30 minutes prior to the scheduled time.

CC-H So if some - -

CMP Okay, we're - we're - we're still eating, and sound great - -

CC-H Oh, okay.

CMP We don't have that much to do but - we don't have much to do after we finish, and we're almost finished.

03 16 40 CC-H Okay, Vance, I tell you what. I don't have a whole lot of clean-up to do either, so if y'all are going

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TAG Tape 205-02/T-111
Page 7

to finish here, in a -- in a few minutes, why don't you give me a call, and we'll do it real quick.

CMP Okay. Yeah, we can talk to you at Goldstone.

CC-H Rog, Vance. We just wanted to get our presleep stuff here - done here over the ATS while we've got it. We still have about another 18 minutes.

CMP Okay.

CMP Houston, Apollo.

CC-H Go ahead, Vance.

03 19 12 CMP I can give you volts. BAT C, PYRO BAT A, PYRO BAT B; they're all 37.

CC-H Okay, and I'll - thanks, Vance. And another thing we want tonight is get a reading on RCS quantities.

CMP Okay.

CMP Okay. A is 67, B is 61, D - let me start that again.

CC-H Okay.

CMP Okay - yeah. A is 67; B is 61; and 60 for C; 59 for D; and PSM, 15 percent.

CC-H Okay, another thing we're going to want, when you can, also I wanted to talk to you - I wanted to throw one switch on - get you to throw one switch on panel 3. It's the S-BAND NORMAL POWER AMP HIGH switch, and put it to LOW.

03 22 23 CMP Okay, that's done. Stand by for the Doppler.

CC-H Okay.

CMP A is 6-1/2, B is 2, C is 11, and D is 12.

03 22 45 CC-H Okay, Vance. Thanks very much. Let me talk to you a little bit about the water situation. The waste tank has got a lot - a good bit of water in it, but the potable tank is about half full, so we'd like you to put the POTABLE TANK INLET valve to OPEN. And

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you kind of have your choice tonight on the SECONDARY COOLANT LOOP. We have sufficient water, and it's - to - for you to either run the loop all night, and let it automatically cycle on and off, or if you'd like to secure the loop before you go to bed, you can do that. And in either - -

CMP Dick, we'd like to run it.

CC-H Okay. That's fine with us. And so we'll just assume that the loop is going to be running all night. And - -

CMP And we'll - close the potable - -

03 23 31 CC-H No - no, open the potable tank. We want - it's only about half full. If we didn't open the tank - potable tank, we'd have to do a water dump. We don't want to do that.

CMP Okay, I'd lost track of what position it was in.

CC-H Okay, it's - we want it OPEN.

CMP Right. And we still have to do the LiOH changeout and set the vent valves.

03 24 00 CC-H Roger. And - EECOM says that any time that it's convenient, you can go ahead and open the POTABLE TANK valve now, and leave it OPEN. And that's all the things on my list except - with the checking on the LiOH canister, and that kind of thing. And we still have about 10 minutes here at the ATS, so I'm standing by.

CMP Okay.

CMP Houston, Apollo.

CC-H Go ahead, Vance.

03 28 17 CMP Okay, Dick. We got your POTABLE INLET valve to OPEN, and we've changed out the LiOH, so maybe EECOM can see that on his instrumentation there.

CC-H Okay, thanks a lot. Saved me a call, because he was - wanted me to make sure you got the POTABLE INLET, OPEN, because if you - if you hadn't we'd have had to wake you up probably at some point and bug you.

CC-H Apollo, Houston. We're 2 minutes to LOS ATS.
Goldstone at 207 plus 32. See you there.

03 33 13 ACDR All righty. Thank you.

03 53 58 CC-H Apollo, Houston. Goldstone for 2-1/2 minutes.

ACDR Roger, Dick.

CC-H Roger.

DMP Hey, Dick. You with us?

CC-H Yes, sir. Go ahead.

DMP Okay. We just saw what we think is a possible volcano. I don't know if you got any operating there or not, but it was about 207 - was it 18 or 19? 207:19:20 - a very large - kind of a mushroom-type thunderstorm-looking thing with a large stream of gray-brown smoke going downstream, mixed with white. All that I could interpret it to be would be a volcano. If not, it was certainly a - a horrendous oil fire. Can anybody track that one for us?

CC-H Okay. We'll - we'll correlate that time and see if we can check it out.

DMP Thank you.

03 55 23 CC-H Apollo, Houston. We're 1 minute from LOS. We're going to make this the last call of the - of the evening, so it's -- we've certainly enjoyed working with you here on ASTP, and we'll see you guys when you get back to Houston. So everybody say, "Good night, Dick."

ACDR Good night, Dick.

DMP Good night, Dick.

CMP Good night, Dick.

CC-H Good night.

CMP Good night, Silver Team.

ACDR Yeah. Thanks a lot for all your help. It was just tremendous.

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CC-H Roger. We really enjoyed it. We'll see you guys
when you get home. Have a nice splashdown.

ACDR All righty. It's been a real ball.

CMP Thank you.

DMP Thank you.

ACDR Thank you guys again for the help.

03 55 51 . CC-H ...

END OF TAPE

C-11
Day 205

TAG Tape 205-03/T-112
Time: 205:04:24 to 205:04:38
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

ACDR Hello, Houston; Apollo.

CC-H Apollo, Houston. Loud and clear. Go ahead, Tom.

ACDR Roger. One thing we're discussing up here, Dick, can we use Myrtle now, or do we have to, because of the Doppler, store the urine? Over.

CC-H Stand by 1. I'll check. Hang on.

MCC-H I don't think - -

04 24 11 CC-H Incidentally, while I'm getting a - an answer for you guys, it turns out that that latitude and longitude that - when Deke reported the possible volcano, was directly overhead the Aleutian Islands, and we're going to be checking it out overnight. But that - that's more likely exactly what you saw.

ACDR Okay. Real good.

04 25 07 CC-H Tom, Houston. No problem using Myrtle. Help yourself.

ACDR Okay. Real - real good. Thank you.

CC-H Okay. Good night.

ACDR Night. Thank you, Dick.

DMP Hey, Dick. Just out of curiosity, does - does anybody know that thing is running up there, or is that what it is?

CC-H Well, Deke, we haven't confirmed it for sure. Our - we - we do know that there are some volcanoes up there, and the latitude and longitude that corresponded to your time was directly over the Aleutian chain. So we're guessing that's what it is, and we're going to check it out overnight and get a straight answer for sure. And so, Bo or Crip, whoever is in here in the morning, will - will have the word for you. I'm sure that's what it is, though.

DMP Okay. No big deal. We're just curious.

CC-H Roger.

DMP Thank you. Good night.

04 25 59 CC-H Roger. Good night.

CMP Houston, how do you read on the intercom - I mean,
on squawk box?

CC-H I read you loud and clear.

04 26 40 CMP Okay. Thank you.

END OF TAPE

Day 205

TAG Tape 205-04/T-113
Time: 205:11:54 to 205:13:00
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

12 22 57 CC-H (Music: "Redneck Mother" by Jerry Jeff Walker.)

12 26 54 CC-H Good morning, gents. Party's over. Time to come home.

ACDR You really know how to wake somebody up, don't you?

CC-H I figured that'd do it.

CC-H Amber Team sitting here ready to monitor your activities today while you're coming back.

CC-H Incidentally, while you guys are getting the sleep rubbed out of your eyes and getting started, the Flight Plan called out for you to start syncing your timer and so forth. We haven't got that loaded in there yet, and not planning on doing it until we get to Orroral about 37 minutes from now. And we'll give you a call then, before we do that.

CMP Okay, Crip.

12 29 05 CC-H Okay. We're about a minute from LOS here at Madrid. And after you guys get this P20 option 5 and so forth out of the road, at about 216:30 on your clock, you should be able to get us at - through the ATS.

END OF TAPE

Day 205

TAG Tape 205-05/T-114
Time: 205:13:00 to 205:14:30
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

13 04 27 CC-H Apollo, Houston. We're AOS at Orroral. Have you for about 4 minutes.

DMP Okay, Crip.

CC-H Okay. If we could - down on panel 230 - get the UP TELEMETRY switch to DIRECT, please. And also, if we could have ACCEPT, we'll give you a state vector and also change our time over for PET.

13 04 46 DMP Okay. You got all those.

CC-H Could - did you get a time hack on when you started battery Bravo on charge?

CC-H Or at least approximate.

DMP Stand by a sec. See if I can backtrack it.

13 05 06 DMP Oh, about 10 minutes ago, probably.

CC-H Okay. Thanks a lot, Deke.

CC-H Okay. And whenever you can get it, we've got our command in; you can take the UP TELEMETRY switch on 230 back to UP TELEMETRY - center position.

CC-H And whenever you guys can get to it, we recommend going ahead and closing the POTABLE TANK INLET valve. And we're not going to do the scheduled water dump we've got coming up at about 93:30 on your PET.

13 06 11 DMP Okay.

CC-H Okay. We're about - a little less than a minute from LOS, and our next station contact is going to be Quito, and that's about 28 minutes away. We've got CMC clock loaded with PET, and you can go ahead and synchronize your mission timer whenever you get a chance.

CMP Okay, Crip. We'll synchronize. See you soon.

PRECEDING PAGE BLANK NOT FILMED

CC-H Okay. How about reverifying on your NOUN 78's for this P20 option 5. It doesn't look quite right for us here on this attitude.

13 09 15 CMP All right, Crip.

CC-H Those look good.

CMP Yeah, it does. Kind of looks funny to us, we - -

CC-H Okay.

CMP - - can't figure it out, either.

13 09 23 CC-H No problem. We'll talk to you about it at Quito.

13 37 41 CC-H Apollo, Houston. We're AOS Quito for 3 minutes.

CC-H Apollo, Houston. AOS Quito. We have you for 2 minutes. How do you read?

ACDR Roger, Crip. Read you loud and clear. How me?

CC-H Okay. Read you the same, Tom. We had - did a little bit of investigating after my call regarding the NOUN 78's on that last time. And we had an error in the Flight Plan, there. And I need to get register 3 on NOUN 78 changed if I could, please.

ACDR Go ahead.

CC-H Okay. We need to change register 3 on NOUN 78 to a VERB 23 ENTER to get it to plus 22814.

13 39 03 ACDR Okay. Register 3. 22814.

CC-H Okay. And that's going to put it more than 10 degrees in error. So you're going to have to initiate the maneuver with a VERB 58 ENTER.

ACDR Roger.

13 39 52 CC-H Okay. We're about 30 seconds from LOS, here. And we'll pick you up at the ATS when you get it locked up at - should be about 6 minutes after.

ACDR Okay.

Day 205

13 40 13 ACDR Okay. We got register 3 set, Crip.

CC-H I'm sorry. Say again?

13 40 20 ACDR Roger. We have register 3 on the NOUN 78 set.

CC-H Roger.

13 40 41 ACDR And we are maneuvering.

13 44 40 CC-H Apollo, Houston. We have you with the ATS. About 52 minutes.

ACDR Roger, Crip.

CC-H When you gents get all squared away up there - I'll be glad to read you some news.

ACDR Go ahead. It's a good time.

CC-H Okay. Your press conference actually ended up making up quite a bit of news yesterday. And I had a few items that sort of came out of that. One entitled - headlined, "Apollo Era to End in Splash. The Apollo astronauts, who have made history in the first manned international space flight, will become the links between the past and the future when their spacecraft splashes down Thursday. Brigadier General Thomas P. Stafford, Vance D. Brand, and Donald K. 'Deke' Slayton are scheduled to end the Apollo era some 480 miles west of Honolulu at 4:18 p.m. central daylight time." And, here's one entitled, "Deke Can Fly Again." I'm sure you'd be glad to hear that, Deke. "America's oldest astronaut will get another chance to fly in space. Donald K. 'Deke' Slayton will be offered a job of directing the horizontal flight test of the revolutionary Space Shuttle rocket plane in the spring of 1977, Johnson Space Center director Christopher Kraft said Wednesday." We also see that we should ENTER on that 50 18 we see on your DSKY. "Slayton also will be considered, Kraft said, as a pilot for the Shuttle flights beginning in 1979. Kraft said he planned to offer Brand a management job if he did not want to wait his chance to become a Shuttle pilot. Kraft said Stafford, an Air Force Brigadier General, had not made up his mind whether he - to stay with the National Aeronautics and Space Administration, the Air Force, or enter private industry or politics." And here's one about our - -

ACDR (...)

CC-H I'm sorry?

ACDR That last option is sure out. I'll clue you, ol' buddy! (Laughter)

13 46 54 CC-H (Laughter) Okay. Okay. I'll take your word for it. Here's one from our friends across the way. "Two Return in Triumph. Moscow. Two Soviet cosmonauts, who held an historic meeting in space with three American astronauts, flew into Moscow in triumph Wednesday. And Tass said two other Soviet spacemen would be back to Earth - on Earth soon. Alexey Leonov, commander of the Soyuz 19 flight, which linked up with the U.S. Apollo last week, telephoned Soviet experts and asked 'How are things with Stafford?' Before flying to Moscow from the Baykonur Cosmodrome in central Asia. Leonov, newly promoted to Major General of the Red Air Force, was told, 'Everything is all right with Apollo's commander, Thomas P. Stafford, and his two colleagues.'" Probably some of the best news is what the weather is out in your recovery site today. It looks supergood out there. Nice Hawaii-type weather. It's - temperature is around 80 degrees. It's 1800 feet, scattered. Wind is coming out of the east at about 15 knots, and the wave heights are about 4 feet. So everything looks supergood out there for you.

13 48 06 DMP That sounds great.

DMP It you'd like a report from us, we're prepared to give it to you.

CC-H We would love to have a report from you this morning, Deke.

13 48 51 DMP Okay, that most important of all reports, coming down to you - the old daily status.

CC-H Standing by with bated breath.

DMP Okay. The AC, breakfast: no coffee, replaced it with tea - Oh, okay, and B is scratch coffee, and add a cocoa. C, scratch shortbreads, and add a tea. And the PRD reading, next page: 11014; 7 good, no medication, and a full tank of water. Okay, on the CP, if you're ready to copy.

13 49 57 CC-H Yes, sir; keep it coming.

DMP Okay, he got everything and add a jerky for A, add a tea to B, and add a salmon to C.

CC-H Sounds like he's getting hungry.

DMP Starving. Okay, the PRD is 48314. That's probably why. The radiation uses a lot of calories.

CC-H Rog. (Laughter)

DMP He had 7 hours of good sleep, no medication, and about 80 seconds of water.

CMP Feel good in spite of all that radiation.

13 50 46 CC-H (Laughter) I suspected you did, Vance. You had a pretty smile on the press conference all day yesterday.

CMP Funny thing, though, lost all my hair in 1 week; can't understand it.

CC-H (Laughter) Well, it - it's not catching, is it?

CMP Hope not.

DMP No, but nobody up here could catch it.

CC-H (Laughter)

DMP Okay, and the DP: A, no changes; B, add a cheese, a strawberry, and a tea; and C, no changes. PRD is 61012, and about 5 hours of good sleep, and I miss my old bedroom since you guys turned it into a Doppler target.

CC-H Sorry about that.

13 51 40 DMP And about 50 sips of water. And that's about the size of her.

CC-H Supergood. Got all that copied down here. Some time, kind of at your - kind of at your convenience today, there are a few minor items regarding the Entry Checklist we probably ought to walk through and talk about. We can do that whenever you guys feel like you want - want to and got the time.

DMP Yeah, we could do it after a while, I guess.

CC-H Yeah, I was certain - -

DMP I'm not quite ready for it - -

CC-H We - we got lots of time today; no rush at all.

DMP Okay.

DMP Crip, anybody got any word yet on our Aleutian Volcano?

13 54 08 CC-H You get me completely at a blank, here. Let me see if I can get an update on that. Hey, we're talking about your - your little bedroom that we spun away yesterday. Well, I'd like to let you know that we still - showing that we got a good, solid lock on that. And incidentally, if somebody has an opportunity today, we would be interested in getting another reading off that Doppler recorder just to see whether it still looks like it's advancing properly.

13 54 32 DMP Okay, we'll give you that here shortly.

DMP Yeah, we spotted what I'm quite sure is a volcano last night there, Crip, just before we went to bed, and they plotted it about off the Aleutians. Only one - other one I ever saw, I was underneath it, so, I'm having a tough time evaluating from this range.

CC-H Okay, we'll - I guess that I missed that in my hand-over from Bo this morning. I'll - we'll go back and get some word on it for you.

13 55 32 ACDR Okay, Crip. Reel A is reading 4; reel B is reading 1-1/2. Over.

CC-H Okay. And I take it C and D haven't moved.

ACDR That's affirmative. C and D are still 11 and 12.

CC-H Okay; real fine. Thank you very much. Appreciate that, Tom.

13 57 09 CC-H Incidentally, I mentioned it earlier, but I'll repeat it again to make sure. We do not want to perform this waste-water dump for entry that's called out at about 27 on the Flight Plan.

13 57 21 CMP Rog. Copied that.

14 01 26 CC-H Apollo, Houston. Coming up in your Flight Plan there, there is an RCS propellant configuration that switches you from PSM to quads. We've already made that configuration change earlier, so that one is not necessary. However, there are a couple of configuration changes that are - not changes so much as valve throwings, that we'd like to - to do to make sure we're in a good position for the rest of the day. If somebody's available, we can just kind of to do those in real time.

CMP Go ahead.

CC-H Okay. We'd recommend that you go ahead and OPEN the SERVICE MODULE RCS PSM HELIUM valve, and verify that the SM RCS PSM MANIFOLD ISOLATION valve is OPEN. That's just in case we need the PSM later.

14 02 10 CMP Okay. I verified a gray talkback on the MANIFOLD ISOLATION, and the PSM HELIUM is coming OPEN now.

CC-H Okay; fine. We'd also like you to hit all four of the SM RCS SECONDARY PROPELLANT FUEL PRESSURE valve switches to the OPEN position just in case they might have got bumped. Since we really can't see those.

14 02 31 CMP Got them.

CC-H Very fine. That's all we need you for, Vance. Thank you. That's all we need you for right now.

CMP Okay. And we're still in ACCEPT. Can we go to BLOCK?

CC-H I'm sorry.

CMP ...

14 02 44 CC-H Yes, sir; you can.

CMP Okay.

CC-H Incidentally, Vance, a little bit later there, on that P20 option 5 we got coming up, there's another one of those mods to give us the new attitude that you guys like. On your NOUN 78 for R2, we want 6000 instead of 9000.

CMP Rog. Understand the standard load.

CC-H Also, a little bit further down there, we call for Deke to go ahead and oper - operate the SIM bay experiments: X-ray, helium glow, and EUV. And what we're going to do is request that you don't do it there, but rather wait until we get ATS coverage a little bit later so that we see them when they're operating. And we'll call that to you in real time.

CMP Okay. What's the time of that one?

CC-H That's at about 94:08, somewhere along there.

CMP Okay. I'll look it up. Stand by.

14 04 49 CMP Okay, Crip. I - I guess then what you want is, at 94:08 or whatever it is, take the three bottom items, which are X-ray ops, HeG ops, and EUV ops, just, say, later.

14 05 07 CC-H That's what I want. And I'll call you when we get locked up on the ATS.

14 15 50 ACDR Hello, Houston; Apollo.

CC-H Go ahead, Tom.

ACDR Okay, Crip. Do me a favor and check with the photo people. For the fireball photography the only DAC cam - mag we have left is an internal one. It's CI01. And ask him what is the settings - the lens settings and everything to use that for fireball photography. I've got the f-25 lens and the right-angle mirror out. So it's CM/DM interior film we're going to use in shooting out the window. So if you get us some settings, I'd appreciate it.

14 16 20 CC-H Okay. I'm holding them here, and they're - just including that in with the - with the items that - when we ran through the Entry Checklist, we can put them in there.

14 16 31 ACDR Sounds good. Thank you.

14 26 45 CC-H Apollo, Houston. For the AC: Tom, when you get an opportunity, I'd like to give you a few words regarding this upcoming vis obs pass.

ACDR Okay, I'm ready.

CC-H Okay. Nothing really - I don't think you have to copy down. You might want to make some notations someplace though. At about 94:36, we'd appreciate it if you could give us - get down a - record a colorwheel reading on what color the water is - looks to you at that particular point. And also, north of the Caribbean islands, just a couple of minutes later about 94:38, we expect you to pass over a developing tropical storm. It'll be about the latitude of Cape Kennedy, directly under the groundtrack scan. So if you could - try to get some stereophotos. If you've got any film left, you can use the camera settings for - that are noted down for site 3 Bravo.

ACDR Okay, real good. And the - at what time is it to look for the tropical storm?

CC-H About 94:38.

14 27 51 ACDR Okay. 36 for the color of water at 94:36 and 38 is the tropical storm.

CC-H That's affirm. And incidentally, the whole vis obs team is - like to give you several "atta-boys" for the performance you guys have been doing on this vis obs stuff. You've been doing a super job, and they can't wait to hear your efforts recorded on the VTR and also to see the photos when you get them back.

ACDR Okay, good. We're trying like mad. The only thing that's gotten to us - there's just been so many clouds up here that - that it's gotten to us occasionally.

CC-H Yeah; understand. It's - it's something you have to live with, but your - your effort's really been great. You can - it's obvious to us down here.

CMP Okay, thank you.

ACDR Thank you, and tell "hi" to Farouk and all his team then.

Day 205

14 28 56 ACDR Okay, Crip. And I'm going to be maneuvering to this vis obs attitude. Will this DAP be - this low-rate DAP be plenty of time to get us over to that new attitude? Over. If I maneuver by 94:12?

CC-H If you maneuver as called out there, that should give you plenty of time. Before you do that maneuver, we would appreciate it if you could give us - give us P00, though, so that we can take a look at some computer information that we don't get while we're in P20, just to make sure we're all good - squared away for this - today's activities.

ACDR All right. Sure will.

CC-H And for the DP: If - Deke, if you're still listening. We're - we still have not been able to get any confirmation regarding that volcano report you gave us last night. We're still looking into it.

14 30 29 ACDR Okay. He's off the headset, but I'll tell him.

CC-H Okay. Thank you, Tom.

14 30 52 CC-H Tom, for your information, that maneuver time is about 4-1/2 minutes. Shouldn't be any sweat.

14 31 00 ACDR Real good. Thank you, Crip.

END OF TAPE

Day 205

TAG Tape 205-06/T-115
Time: 205:14:30 to 205:16:00
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

14 31 55 ACDR Hey, Crip. I have a question.

CC-H Go ahead.

ACDR Was it Phil Shaffer that selected that wake-up music this morning?

CC-H Negative. Negative. That was compliments of your Flight Director Frank Littleton and your CAP COMM.

ACDR Okay. Thank you.

CC-H Although I'm sure that Phil and Don Puddy would highly approve of it.

CC-H For the AC, Tom, if you could go ahead, or whoever's close to the DSKY, and can give us P00 right now. We'll take a look at the - that computer downlink.

ACDR And you have P00.

CC-H All right. Let's look at it a few minutes and we'll turn it back to you.

CC-H Okay; we've got all the information we need, and you can go ahead and take it back. And if you want to, you're clear to go ahead and press on with your P20 option 5.

14 35 59 ACDR Roger. Thank you.

CMP Houston, Apollo.

CC-H Okay. We're getting ready to lose you and going to have you at Quito at - Oh, we'll have you here at Orroral for a few minutes, but go ahead.

CMP Crip. Do you have any updates on the times for the mapping pass 135, 136?

CC-H Don't believe 135 is a mapping. And let - and we'll get one for you for 136 - 136 a little bit later. Right now we show no update for them.

CMP Okay.

Day 205

14 36 49 CC-H We're going to lose you briefly here, and I should pick you up - we may go straight through. I'm going to get VHF through Orroral.

14 38 00 CC-H Okay. We've handed over and we're back with you through Orroral Valley.

CMP ... maneuver to the ...

CC-H I'm sorry, you were - you were unreadable. Say again.

CMP Roger. We're starting - we are starting the maneuver for Earth observation ...

CC-H Copy.

ACDR Houston, Apollo.

CC-H Go ahead.

ACDR Okay. On the Doppler shutdown coming up. Do you want to give us a call on that on a specific time, or do I do it just at the 94 of say 12?

CC-H You've already started this maneuver, and that is cutting us off all our data, so you may go ahead and perform it now.

CC-H Apollo, Houston. We're about - about a minute from LOS and we'll see you again at Quito in 28 minutes at 94:32.

14 41 18 CMP Cheerio.

15 10 57 CC-H Apollo, Houston. AOS Quito for 3 minutes.

ACDR Okay, Crip. And we just shot the Galapagos.

CC-H Roger. Any turtles down there?

ACDR Only big ones.

CC-H Roger.

CC-H And, for whoever's going to set up the high gain this time, pitch is modified slightly from what we've got in the book. It should be about a minus 8, instead of the 15 we have there. So, pitch of minus 8, yaw of 322.

ACDR Roger. Pitch of minus 8.

15 12 24 CC-H We're going to drop out, here, in about a minute, before we pick you up on the ATS.

15 14 32 CC-H Apollo, Houston. We're talking at you through the ATS.

ACDR Roger. Coming up over Jamaica.

CC-H I'm sorry. I'm talking at you through MILA, not ATS.

ACDR Hey, Crip. We're on top of a tropical storm, right now.

CC-H Very good.

CMP Houston, Apollo.

CC-H Go ahead, Vance.

CMP Are we over the area where you reported there might be a tropical storm?

15 17 38 CC-H That's affirm. You should be just about in that position.

CMP Okay. It doesn't seem to cover so much area, but it does have a rather swelling appearance. I don't see an eye. But I can see where an eye would be.

CC-H Okay. I think that it's just developing, yet. I don't even believe it's to the area where they're - they're calling it a storm, yet.

CMP Roger.

DMP It looks just like the bunches of a thunderstorm patches we've seen around the Pacific area the last couple of days.

CC-H Copy.

15 22 33 CC-H Apollo, Houston. When somebody has an opportunity, we would like to go ahead and activate the SIM bay experiments now; X-ray obs, helium glow obs, and EUV obs. And for EUV we would like to use DETECTOR 1, vice 2.

ACDR Okay.

DMP Okay.

15 22 55 CMP Okay. Understand the three experiments, helium glow, X-ray, and EUV. DETECTOR 1 for EUV. We'll start her right up.

CC-H Okay. Thanks a lot, Vance.

CMP Houston, Apollo.

CC-H Go ahead, Vance.

15 25 01 CMP Let's see. I guess we had the LOW VOLTAGE POWER, OFF, on this. You need that on too, don't you?

CC-H That's affirm. I should have reminded you of that. We turned it off last night, so that - we do need that on.

CC-H Apollo, Houston. If somebody's got a moment, I'd like to - like to bend your ear about one item.

ACDR Go ahead.

CC-H Okay. We've discovered that the DAC film that - our friends were to use when they were over in the command module, namely CI09, 10, 11, and 12, were not apparently returned in the Soyuz. And, consequently, we think the - -

CMP Yeah, we - we - -

CC-H I'm sorry.

DMP Yeah, we know that. We know that. We got them.

ACDR And they're stowed in B-5, right now.

CC-H Okay, if there's any chance at all on that film, that we've got - that we want to pass out quick to get developed, we would certainly like to be able to pass those out also. Do - do you think that's possible?

15 26 51 DMP Sure, we'll just put them in the same bag with the quick-release stuff.

CC-H That'd be great.

ACDR Yeah. You can tell the recovery people, we're going to have - Crip - about three bags, three or four bags of quick-release stuff. So we'll hand it to them as soon as we open the hatch.

CC-H Okay, super.

DMP And, Crip, we still owe you a O₂ fuel cell purge, but we're holding on that until we get through this daylight pass.

CC-H Okay. Our friendly EECOM down here has been - been noticing that - that we hadn't done it, and it is not required. So that - you can forget it.

DMP Oh. Well, that's nice of you. Thank you. We thought it was more time-critical to get some film. We only get one chance at that.

CC-H Roger that.

15 28 56 CMP EECOM's real easy today, I guess.

CC-H Oh, yeah. He - just likes to know where things are, though. So he appreciates knowing that we didn't do it.

CMP Right.

ACDR Sounds like we've but - budgeted this hydrogen pretty - pretty good, didn't we?

CC-H Yeah. Apparently, we're right on the line.

CC-H Incidentally, Tom, since I had you on the line there, might - might as well tell you that due to that problem we've had on your OBS the other day, that we're requesting that you use that spare set of leads and electrodes that we've got in the medical kit over in - B-13.

ACDR All righty. Like I said, since that's the most important message of the day, I hope later on we have a minor one, like the retrofire pad.

CC-H Roger that.

CMP Ireland really is green.

CC-H Really is what?

15 31 10 CMP Say, Ireland really is green.

CC-H How's the percentage that - does most of the world look green up there? Or most of it - well, I know most of it's blue.

CMP Not as green as it looks on the ground, generally.

CC-H Rog.

DMP But Ireland is really supergreen. We got a couple of pictures of that, and we're over the south end of England here, now.

ACDR Yeah, England - was looking great, except it just has these broken clouds all over it. That's its problem.

CC-H Rog. Obs normal.

ACDR Yeah. Crip, you can tell the BBC and all our good friends in England hello for us.

CC-H Roger. I'm sure they'll appreciate that greeting.

DMP Yeah. We're sitting high over London at present.

CMP Unfortunately, quite a bit of cloud cover over England.

CC-H Roger.

ACDR Okay, Crip. We can see the Zuider Zee loud and clear here, but unfortunately, there's still some cloud cover.

CC-H Roger.

15 48 54 CC-H Apollo, Houston. We have somebody available to throw a couple of switches for us on 230, involving the X-ray experiment and a little engineering test we're running?

CMP Stand by 1, Crip.

CC-H Okay. No rush.

CMP Okay. Go ahead, Crip. We've got somebody down there now.

CC-H Okay, Vance. What we need is to take the X-RAY HIGH VOLTAGE POWER switch to OFF and, then the BACKUP PURGE switch to - to OFF, which is momentary, there. And what we're doing is - we're - we're re-pressurizing the detector in the X-ray unit. We just took a look at it with - It bled down, which is what we had you do yesterday, to see if we could get that high voltage from - to quit discharging on. Now we're going to pressurize it and take a look at it again.

15 50 01 CMP Okay. So, we'll go HIGH VOLTAGE, OFF, and we'll take the BACKUP PURGE switch and hit it momentarily to OFF.

CC-H Okay. And after a couple of minutes I'm going to be requesting that you turn the HIGH VOLTAGE back ON. But we want to delay on that until we get - get pressurized.

CMP Okay.

15 52 34 CC-H Apollo, Houston. If somebody can turn the X-RAY HIGH VOLTAGE POWER to 1 for us now, we'd appreciate it.

CMP Okay.

CMP And, Crip. We'll go into P20 here, for maneuver to mapping attitude, if - okay to you.

CC-H Okay. No problems with that. We potentially may lose you or have an early LOS with that maneuver. If we do, we'll see you again at MLLA in about 52 minutes. I did want to - -

CMP Okay. Well that's the reason - that's the reason I was calling you. If you want to keep us in this attitude - for any reason, why - recover any data or anything, why - we can stay here awhile.

CC-H Okay. Why don't we hold up on it just a little bit. And if Deke's handy, I can bend his ear about one item coming up on vis obs here.

CMP Okay. We'll get him on a headset.

15 55 33 DMP Okay, Crip. I'm on the air here. Do you have a message for me?

CC-H Okay. What we wanted to tell you was the - we got some ships collecting some data on this 5 Alfa, which - that you're going to be coming across next time, and we'd like you to - -

DMP Okay.

CC-H - - attempt to get a colorwheel reading of the coastal water that'll be visible from - and hopefully out of - they'll be visible out of CM-3, and they'll be between the Mississippi delta and the Gulf Coast around Mobile. Just, in that general area there.

DMP Okay.

CC-H That's at around 96:07 that that - that'll be coming up.

15 56 17 DMP Rog. Thank you.

END OF TAPE

Day 205

TAG Tape 205-07/T-116

Time: 205:16:00 to 205:17:30

Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

16 01 16 CC-H Apollo, Houston. We have adequate amount of data at this time, and you're - go ahead to proceed on your P20 option 5.

ACDR Okay, Crip. Copy that. Thank you.

16 04 27 CC-H Okay. We're getting close to losing you, and we'll see you at MILA in about 42 minutes. That's at 96:08.

ACDR Okay, Crip. Thank you. We're progressing normally here, I think.

CC-H Very good. Somewhere during that next ATS pass, we can talk a little bit about changes to the Entry Checklist, and they're not really changes so much as notations and that kind of thing. And we'll also try to get you a pad there.

16 04 55 ACDR Okay; very good. Thank you.

16 45 30 CC-H Apollo, Houston. We're AOS through MILA. I've got you for 6 minutes.

ACDR Okay.

16 52 48 CC-H Apollo, Houston, I guess, for Vance. If you're running that mapping pass there, we might as well go ahead and not terminate the mapping camera on the time and just go ahead and let it run to completion. We have plenty of film.

CMP Okay. We - we won't cut it off in between there.

CC-H Okay.

DMP And we just crossed good ole Boothbay again, and, as usual, it's under clouds here from our angle. Got some beautiful pictures, however, of the Cape Cod area.

CC-H Very good.

DMP And we did get some color prints, or measurements, between the - New Orleans and Mobile there.

CC-H Great.

DMP Get back to you in a little bit.

16 53 34 CC-H Okay; fine.

16 55 53 ACDR Okay, Crip. I think I'll go ahead and get BMAG 1, ON a couple of minutes early.

CC-H Okay.

CC-H Apollo, Houston. If somebody is available, we got another little special test we were going to run down on 230. This time on the helium glow instrument. Just need a couple of switches there.

ACDR Okay. I'm down here, Crip. Go ahead.

ACDR Okay, Tom. What I need is, under the HELIUM GLOW under HELIUM INHIBIT switch, I want first to select DETECTOR 1, and then DETECTOR 2, and then back to center. And after you do that, we want to CLOSE the HELIUM GLOW COVER. And what we're doing is we're going to take data with the cover closed, and that way it'll give us some good background information on the instrument itself.

ACDR Okay. I'm going here to detachment - DETECTOR 1.

16 57 42 ACDR MARK it.

ACDR Now back to 2.

16 57 45 ACDR MARK it.

16 57 48 ACDR And now center. And I'll CLOSE the HELIUM GLOW COVER.

CC-H Very good. Okeydoke.

CC-H Incidentally, for your information, that little test we had run earlier on the X-ray instrument allowed us to isolate that the problem was within the detector itself and not in the - in the electronics.

ACDR Okay; good.

CC-H Which is good engineering data for future experiments.

CC-H And, Apollo, Houston. At your convenience during this pass - and we've got about 45 minutes of it - I would like to kind of walk through the Entry Checklist and note a couple of items to you, and also give you your preliminary pads. And there's no rush on that at all.

CMP Okay.

ACDR We'll do it in just a minute.

CMP Yeah. Let us get finished with this Earth obs.

CC-H Yeah, we've got plenty of time for you to - yeah, we got plenty of time for you to finish up the Earth obs pass and do it after that.

CC-H Apollo, Houston. If we can go ahead and have ACCEPT, we'll load your entry REFSMMAT.

17 00 10 ACDR You got it, Crip.

17 02 37 CC-H Apollo, Houston. For your information, we have completed the REFSMMAT load. You may as well go ahead and stay in ACCEPT, because after we complete the P52's 3 and 1, we'll be loading state vectors.

ACDR Roger. I understand.

17 10 39 ACDR BMAG coming ON.

CC-H Say again.

17 23 52 CC-H Okay. We copied that P52.

CC-H Apollo, Houston. Vance, if you'd like to go ahead and do your option 1 now, to get it out of the road, then we can go ahead and upload your - uplink your state vector.

CMP Okay. Did you see it all? I just got back on comm.

CC-H That's affirmative. We got it all.

CC-H Apollo, Houston. If somebody's available we want to try out something a little bit different with the EUV. We'd like to go ahead and close the cover with it still - still on. Down on 230.

Day 205

DMP Okay. Stand by. I'll get it.

CC-H Deke, while you're on the line there, we haven't seen our CO₂ come down like we normally do after the LiOH change. Have you managed to get that in yet? We had one scheduled about 95:25, or something like that.

CMP Negative. We had a congestion down in that area while we were changing film and that sort of thing, packing things away. So we'll get it right away, as soon as we can.

17 26 46 CC-H Okay. No rush, Vance. We were just wanting to get a status. Thank you very much.

CMP It was another case of we all stand in line to utilize certain areas.

CC-H Roger. I figured something of that nature. Kind of hard to stand there, though, isn't it?

DMP Hey, Crip, did you say it was the X-RAY COVER you wanted to CLOSE and leave the power on? Is that correct?

CC-H That's a negative, Deke. It's the EUV we wanted to CLOSE.

DMP EUV; okay.

17 28 15 DMP Okay. She's CLOSED.

CC-H Okay. We're just going to sit here and get a little bit of data on it with the cover closed. And y'all can go ahead, and you've got a deactivation scheduled a little bit later that you can do on schedule.

DMP Okay.

CMP Can you see these torqueing angles, Crip?

CC-H We're looking at it, Vance. Thank you.

CMP Torqueing now at 96:51:00.

17 28 53 CC-II Copy that.

END OF TAPE

1060

Day 205

TAG Tape 205-08/T-117
Time: 205:17:30 to 205:19:00
Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

17 30 05 CC-H Okay. We see you're back to P00 now, and we'll go ahead and get squared away and give you a PSM state vector and your target loads.

CMP Okay. Go ahead.

CC-H Okay, Vance. And we've got another - about another 13 minutes left in this ATS pass and if - if it's convenient sometime, we would like to go through the Entry Checklist with you and also give you pads. We had thought we were going to lose this Vanguard pass scheduled a little bit later, but we do have it also, if we need to get anything there.

CMP Okay. We'll dig out the entry book.

CC-H Okeydoke.

CMP Incidentally, one interesting thing about the LiOH changeout is the canisters in B-6, of course, are behind an apron, which is behind the cryo freezer; that kind of makes it - only that changeout - a big deal.

CC-H Roger that. Understand.

17 33 18 CMP Right. Okay, Crip. Ready to copy your changes. Page, please?

CC-H Okay. If you got the book there handy, the first thing is not really a change, but just a comment on page 1-3. We are, of course, operating on secondary evap now, so that's totally unnecessary; however, one thing there, we'll be using the secondary evap, of course, to - for steam pressure on the 90K indication. This - -

CMP Okay. We - we have to be in SECONDARY to get that indication.

CC-H That's affirm.

CMP I mean, we have to be monitoring that.

CC-H Yeah, there's no real reason necessary to be PRIMARY, as called out on the thing, I guess.

CMP Right.

CC-H Okay. The other thing is on page 1-4, to update your - settings for the fireball photography -

17 34 20 CMP Go ahead.

CC-H Okay, the only change we need is that T11 should be T22, and we want to change from 1/500th to 1/1000th. Otherwise, it's as written.

CMP Okay. T11 should be 1/5 - I'm sorry, T11 and 1/500th changes to T22 and 1/1000th.

CC-H That is correct. The other small notation is that, over on the right-hand side there under final stowage checklist, it has on about the fourth line down, "GLYCOL TO RADIATOR - SECONDARY valve to BYPASS" and to verify it. It is in NORMAL now, so we will have to go to BYPASS. So the verify is not applicable after all.

CMP Copy. Right.

CC-H Okay - and why don't we flip on over to E/2-1 - and let me just make a comment here. You don't have to write anything down; I'm going to talk a little bit. You know we've still got that ICDU failed indication inhibited; in other words, so it won't come up and give you a failure indication. We feel that's the way we'd like to go ahead and leave it for entry. And the only items that we'd like you to note is that if we did have a CDU problem and our - when you got down to about .05g at minus 5 minutes and your display, if it had not advanced to the 06 64 - in other words, it was still 06 22, you can go ahead and load your NOUN 20's with a .05g attitude, and that'll allow everything to progress normally.

17 36 03 CMP Okay. Understand that.

CC-H Okay. All the other CDU failures you can also detect by your normal monitoring of your ball versus the beta angle commanded on the DSKY.

CMP Right. The - I guess what you're saying is we won't get the alarm if we had a real problem, and the way to detect it is either by looking at the ball or seeing that we don't get the NOUN 22 at the proper time, and then you get into the action.

CC-H That is affirmative. And any yaw CDU failures will be - come up with a NO ATT and GIMBAL LOCK warning lights, as normal.

17 36 44 CMP Right. If that happens, we're on GDC ..., probably.

CC-H That's affirm. Okay. One - I'd like to slip over to page 3-1 and give you a backup to a backup here. Down at the indic - note on the lower left-hand corner of the page, at 23-1/2K where it talks about cabin pressure increasing and what to do if it's not, about going CABIN PRESSURE RELIEF valve to DUMP. That - that duct is, you know the one also that your evaporator's been out of, and there is some potential, although small, that some ice could have ended up forming in the CABIN PRESSURE RELIEF valve such that even going to DUMP would not work. If that should be the case, the - the thing to do is to have Tom there in the center couch, or whoever can reach it easier, just to take the side half - hatch CABIN PRESSURE DUMP valve and open it up at - about 800K. I'm sorry; open it to - yeah, go ahead and do it there at 23-1/2K if the thing's not coming up and your CABIN PRESSURE RELIEF valve going DUMP does not help. That's a backup step to the backup. Okay - -

CMP Understand. I - I presume that that the heat of entry would help our duct situation, but - but - we got that noted.

CC-H I'm confident it would, Vance, but it just makes everybody down here feel all nice and comfortable if we've covered every - every angle we can think of. If perchance you did have to open the thing, we'd want you to close it again at 800 feet.

CMP Roger. Good idea.

CC-H Okay. And if you'd flip over to the completion charts, we'll talk about one other item, please, on 4-1.

17 38 56 CMP Okay. Go ahead.

CC-H Okay. Currently, with the amount of SPS we have available to us in our quads, we do not have a full four-quad completion capability. If our SPS delta-V to go is greater than 169 feet per second, we're going to go around. In other words, if we had an SPS failure, and we still had a delta-V of greater than 169, we'd go ahead and go around the six revs. If it's less than or equal to 169, we can go ahead and complete per the chart here. And what we want you to do is to draw a vertical line up from the bottom, starting at 169, and just make a little notation to the right of that that you'd go around if you were in that particular case. To the left of it, we could complete okay. We have RCS capability to - for 191 feet per second; that's where that line comes out in - on your graph there. And if any of that's not clear, I want to discuss it with you.

17 40 10 CMP Okay, well, to - throw it back at you. We have 191 RCS - feet per second - RCS capability, slightly lower than normal, not much. We'd go around if - well, if we had to do a completion, and if to-go was greater than 169 - stand by. Okay, and the to-go was greater than 169, we'd go around and if it's less than, we'd complete. Very clear.

CC-H Okay. Real fine and - Stand by 1. Yeah, and of course, it's obvious to you, that if you don't get ignition on your SPS, that we will go around in that case since we don't have a full four-quad capability.

17 41 03 CMP That's right.

CC-H Okay, that's all I had, and you guys can go around getting all your little ditties out of the road - getting your OBSs on and all that sort of thing - and get squared away. We're in good shape.

CMP Okay. Most of us have them on but we've been moving around so much, we've been off comm and off biomed a good bit of the time.

CC-H I am about a couple of - about ready to lose you on the ATS here, and what I'd like to do is to get the

pads to you when we - when we get to Vanguard, and that's about 9 minutes away.

CMP Okay. We'll be waiting, happily, for your pads.

CC-H Okay, fine. And we've completed our loads and you can go ahead and go back to BLOCK; the DSKY's yours.

17 41 48 CMP Okay. BLOCK.

CMP And, Crip, are you still there?

CC-H That's affirm.

CMP Okay, and we'll finish now the rest of the SM experiment deactivation.

CC-H I'm sorry, I couldn't get that.

MCC-H ... deactivates.

CC-H Oh, deactivate the experiment. That's affirm. Experiments has gotten all the data he can think to get out of it.

CMP Okay, and you still want to leave the POWER switch ON on the EUV until further notice, huh?

CC-H Negative. You can go ahead and do a complete powerdown at this time.

CMP Okay, very good.

17 50 21 CC-H Apollo, Houston. We're AOS through the Vanguard and when somebody has a chance to dig out the Entry Checklist, 1-6, we can give you some pads..

CMP Ready to copy.

CC-H Okay. Also, we're ready to go ahead and terminate the charge on battery Bravo if Deke can get to that. And starting with your SPS deorbit burn pad: NOUN 33 - 100:00:00.00; would you believe that? Minus 189.2, all balls, plus 017.4; all balls, 180, all balls; 171.9; 00:07; 086.0; plus 11.1; 25067; minus 0.19, minus 0.78; 33, 054.8, 29.3; 14/4. Readback, please.

CMP Okay. Preliminary SPS deorbit burn pad: 100:00:00.00; minus 189.2, plus all - all zips, plus 017.4; all zips, 180, all zips; 171.9; 00:07; 086.0; plus 11.1; 25067; minus 0.19, minus 0.78; 33, 054.8, 29.3; 14/4.

CC-H That's a good readback, Vance, and if you want to go to 1-7 now, we'll give you your preliminary entry pad.

17 52 35 CMP Okay. We're going to really have a light bird on this entry, aren't we?

CC-H Roger.

CMP Go.

CC-H Okay. Starting off with the area. It's 138-4 Golf; right 045; 046; plus 22.00, minus 163.00; 1637.1, 25752; 26:25; 27:51, minus 0444.7; 307/051, 33:42; 27:24, 32:34, 36:27, 37:14. Readback, please.

CMP Okay. Readback of preliminary entry pad. 138-46; right 045; 046; plus 22.00, minus 163.00; 1637.1, 25752; 26:25; 27:51, minus 0444.7; 307/051, 33:42; 29:24, 32:34, 36:27, 37:14.

CC-H Okay. A couple of corrections on that. It's not - not going to make a lot of difference to you, but the area is four Golf vice - 46. On your - time for BBO, it's 27:24 vice 29:24.

CMP Right. Couldn't read my own writing. Okay. Go ahead with any remarks.

CC-H Okay. Only remark is pitch for rolling entry is 065 degrees.

CMP Copy.

CC-H Okay. Fine. And we're about to go over the hill; we'll see you in 19 minutes at Goldstone. That's at 97:37, and we'll pick up our logic sequencer checks there.

17 55 11 CMP Okay. We'll be ready.

18 14 25 CC-H Apollo, Houston. We are AOS at Goldstone for 3 minutes. And when we get locked up on data, we will be ready for the logic sequencer check.

ACDR Okay. Stand by.

ACDR Let us know if you got the data.

CC-H I'm sorry. Say again?

ACDR Are you locked up now, Crip?

ACDR Are you locked up, Crip?

CC-H We're ready. You can proceed on.

ACDR Okay.

CMP Okay - -

ACDR Okay, coming on - next one's SEQUENCE LOGIC, 1 and 2, coming on and up.

18 15 48 ACDR Okay, the SECS LOGIC are on and up.

CC-H Roger. Stand by 1.

CC-H Apollo, Houston. That looks good. We're GO for PYRO ARM, as required.

ACDR Roger.

CMP Okay.

CC-H Okay, and I kind of led you guys astray, awhile ago, on getting the SIM bay experiments down. We were supposed to be deactivating them, and I think we just did a normal powerdown. And I've got two switches I need to get thrown at - in that panel to get it squared away.

ACDR Okay. Just a minute, Crip.

CC-H Okay. No rush.

ACDR Okay. Go ahead.

CC-H Okay, Tom. What I need is the EXPERIMENT COVERS ARM/SAFE switch placed to SAFE, and the X-RAY LOW VOLTAGE POWER to OFF.

18 16 59 ACDR Okay. ARM switch is SAFE. X-RAY LOW VOLTAGE POWER, OFF.

CC-H Okay. That's a good deal. We're all in - all squared away now. One item - I guess we need for - for entry postflight photos is - verification that we did get our ZFF taken on time - the last one.

CMP Verification of what?

CC-H That we did get the ZFF photos, our favorite fungi, taken back there at about - oh, 93:50 on the DET. Somewhere in that order.

ACDR It was on time.

18 17 33 CC-H Okay, fine. Thank you.

ACDR As usual, Crip. As usual.

CC-H Oh, Roger. Didn't expect any difference. We're going over the hill; we'll see you at Newfoundland in about 7 minutes.

ACDR Okay. And I got the pyro battery check at Madrid. Thank you.

18 17 44 CC-H Roger.

18 26 12 CC-H Apollo, Houston. We're AOS Newfoundland. And, with the ATS, we should have you about 50 minutes.

ACDR Roger.

18 31 43 CC-H Apollo, Houston. Understand you gave me a call awhile ago. It didn't get here. Say again.

ACDR I just wanted to check if we were locked up on ATS. Over.

CC-H We are locked up on ATS. Sounds like we got our echo here. Let - let us get that squared away.

ACDR Okay.

18 31 59 CC-H Okay. We're all with you - squared away now.

18 36 27 ACDR Houston, Apollo.

CC-H Go ahead.

Page intentionally left blank

CC-H We're looking at it, Vance.

CMP Okay. And if you've got those copied, I'll torque at 98:11:30.

CC-H Do it.

18 54 28 ACDR Hello, Houston.

CC-H Go ahead.

ACDR Houston, Apollo.

CC-H Go ahead, Apollo.

ACDR Yeah, I was just looking way ahead on this secondary water activation since we're already boiling and everything. It ways SECONDARY COOLANT LOOP, AC2; we've got it on AC1 now. You want us to switch it? Over.

CC-H That'll be fine, Tom; you can leave it there. And, I guess, one little item here. In going through it, we have verified that the ELECTROPHORESIS COOLING valve is in BYPASS; is that correct?

ACDR I just jumped ahead on it: I'll get back to that.

18 55 01 CC-H Okay; no sweat.

END OF TAPE

Day 205

TAG Tape 205-09/T-118

Time: 205:19:00 to 205:20:30

Page 1

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

19 02 06 ACDR Crip, a review one more time again - Hold it -
okay, we've got it written down; never mind.

19 02 11 CC-H Okay, fine.

19 13 26 CC-H Okay, guys, we're about 2-1/2 minutes from losing
you on the ATS here; everything's looking supergood
with your GDC and your platform and so forth. If
you completed your EMS checks, we'd be glad to get
that, and the only other item that we haven't seen
cleaned up is that LiOH canister change which we didn't
see earlier; we haven't seen that effect on our PPCO₂.

ACDR Yeah, that was changed on - in fact - ahead of time.

CC-H Okay, Tom.

CMP Tom changed that out.

CC-H Okay, fine. We had gotten that last one from you,
Vance, and we didn't - didn't think it had been
changed yet. That's fine.

19 14 15 CC-H And, incidentally, we've picked up a little bit here,
we're going to have - have Orroral in about 3 minutes.
We've also got a Vanguard pass this time that we'll -
we're going to pick up.

19 18 18 CC-H Apollo, Houston. We're with you on VHF through Orroral.

CMP Roger.

CC-H Rog. Don't anticipate too good a comm this time,
and we'll have you at Vanguard in about 3 minutes.

19 19 43 CMP Houston, Apollo.

CC-H Go ahead, Vance.

CMP Our EMS checks out good for entry.

19 19 50 CC-H Very good.

19 21 29 CC-H Apollo, Houston. We're AOS through the Vanguard;
have you for 7 minutes on a freebie pass.

Day 205

ACDR How about that. Say, tell the troops at the Vanguard thanks a lot for all their help and steaming around out there. It's really great to be over them.

CC-H Rog. They've done a super job - and they're currently enroute to go over and support the Viking Program.

19 22 05 ACDR And the EMS - EMS entry test went good. As Vance told you, we're on the delta-V test.

CC-H Roger that. Thank you.

19 22 19 ACDR And that is in perfect condition.

CC-H Everything's going super. Even down here in the MOCR, we're squared away; we've got our two dozen roses from Cindy Diane like she's been sending all through the Apollo program so - we're GO.

ACDR Sounds great.

CC-H The weather out there at your recovery point is still super, also. It's, once more, 1800 scattered, 10 miles vis, winds out of the east about 15 knots with wave heights 4 feet, may even be less - looks like they're declining a little bit. Should have a super landing.

ACDR Roger. Thank you.

CC-H And a little reminder, of course, you know the New Orleans is the recovery ship; your two helos out there will be Recovery and Swim.

ACDR Recovery and Swim. Roger.

ACDR And we reverified that the 6-165 ELECTROPHORESIS COOLING valve was in BYPASS.

CC-H Okay. Make our EECOM down here feel much more comfortable.

19 26 42 CMP Houston, Apollo.

CC-H Go ahead, Vance.

19 26 46 CMP RSI alinement checks out good, and no RCS - CM RCS preheat required.

CC-H Very good.

19 27 42 CC-H Apollo, Houston. We're a little over a minute from LOS at Vanguard, and our next station contact will be Goldstone in 19 minutes; that's at 99:09. Your preliminary pads are GO; we will not have a pad update for you there. The only thing we'll be needing is ACCEPT when we become AOS and we'll give you a state vector update.

CMP Okay. Understand - understand, the preliminary pad -

19 28 08 CC-H That's affirm; they're GO.

19 47 31 CC-H Apollo, Houston. We're AOS Goldstone - 4 minutes.

CMP Roger, Crip. Coming right up over the San Joaquin Valley. Loud and clear.

CC-H Roger. Beautiful place. Hey, could - if we could go ahead and have ACCEPT, we'll send you a state vector.

19 47 46 ACDR You got ACCEPT, Crip.

CC-H Apollo, Houston. Our state vector load is complete; you can go back to BLOCK. We're about a minute and a half from LOS; have you again in Newfoundland in 7-1/2 minutes.

CMP Okay. Do you want to activate the RCS over Newfoundland or ATS?

CC-H Oh, if you can hold up until we get ATS, we've got data on there - we don't have data for the Newfoundland - we'd appreciate it.

19 50 05 ACDR Okay.

19 59 25 CC-H Apollo, Houston. We're talking at you through the ATS, and we'll have you until you turn it off.

ACDR Sounds good, Crip. How do you read?

CC-H Loud and clear.

ACDR All right.

Day 205

ACDR Okay, we're getting strapped in.

CC-H Okay, Tom. Whenever you all get all squared away, we've - got good data here, and you can go ahead and proceed on with the CM RCS activation.

ACDR Roger. We'll activate the CM RCS.

20 02 21 ACDR SECS LOGIC, on and up.

CC-H And we're GO for PYRO ARM.

20 00 30 ACDR Roger. GO, PYRO ARM.

ACDR Okay, 3, 2, 1 -

20 00 48 ACDR MARK it. Got a nice bang. And both rings are stabilized. You're probably reading it out. Number 1 looks like about 36 plus, going back up - and number 2 is stabilized at 36.

CC-H Okay, all looks super here also, Tom.

CC-H Apollo, Houston. We just got a little tracking data that will allow us to get your state vector in better shape than we did it at Goldstone. So if we could have ACCEPT before you go into P30, we'll go ahead and update that once more, tweak it.

20 01 26 CMP You got it.

CC-H Apollo, Houston. Our state vector base complete; you may go back to BLOCK.

20 04 09 ACDR Roger. Going back to BLOCK.

ACDR Okay, Crip, if you're ready, we might as well go ahead and get a couple minutes ahead of the game. Want to pick up on the checklist at 99 plus 30; we'll cycle CMC MODE switch FREE and AUTO and do the - recheck the VERB 48.

20 04 47 CC-H Press on.

20 10 11 ACDR Houston, Apollo. We have Antares in the sextant.

20 10 14 CC-H Copy that. Good star check, thank you.

20 25 24 CC-H Deke, the reason for that is that Alfa's at about 5
amphere - hours out of it, and we just finished
charging up Bravo, so that's the reason it's higher.

DMP Okay, fine. Thank you. You sure there's some
logical reason?

CC-H Well, at least you gave EECOM here something to look at.

DMP I hope I didn't tear him away from his coffee.

CC-H He managed to keep one hand on it at all times.

20 25 55 CMP Are all of Ed's antennas under control?

CC-H Promise they're in good shape. We got - we got Ed
sitting in the back seat right now.

CMP He's just going to watch this one, huh?

20 26 14 CC-H Rog.

20 28 19 CMP Crip, you've had a lot of practice on these entries,
haven't you?

CC-H Well, we're - we're getting a little bit, but afraid
not nearly as much as you've had.

CC-H The only reason for that is, Vance, we've - because
I like to smoke the cigars.

20 28 56 CMP That's the way.

END OF TAPE

Day 205

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

20 32 20 CMP We're showing four good gimbals.
CC-H Roger.
20 34 34 CC-H Apollo, Houston. We're all GO here for your deorbit
burn.
CMP Okay, Crip. Very good. So are we.
20 39 09 CC-H Copied that.
ACDR Looks like a real nice little perigee.
CC-H Roger.
20 39 38 ACDR Minus 18:40 EMS.
CC-H Roger.
CC-H Is that 18:04, Tom?
20 42 47 ACDR Okay, Crip, we're GO for your shutdown on the ATS.
Over.
CC-H And you're GO to go ahead and do that, and we'll have
you in about 7 minutes at ARIA - correction, Orroral.
ACDR Sounds good.
20 43 02 MS See you later.
20 49 49 CC-H Apollo, Houston. We're AOS through Orroral, on VHF.
20 51 04 CC-H Apollo, Houston. We're AOS Orroral; have you for a
couple of minutes.
CC-H And, Apollo, be advised that we have nega - no pad
updates for you.
20 51 30 DMP How are you reading us, Crip?
CC-H Loud and clear, how me?
DMP Okay. You guys got data down there now?

CC-H That's affirm. We've got a few minutes coming across Orroral here.

20 51 39 DMP Okay. How about telling them to take a look at our pyro batteries. I'm showing a amp oscillation. About a minus 2 to plus 2, I don't think it's anything, but - I never noticed it before so they might want to look at them.

CC-H We'll take a look.

20 52 52 CC-H Tom - correction, Deke, would you clarify that you're talking about your pyro bus amps?

DMP That's affirm - pyro. And they should nominally be reading zero - -

CC-H Rog.

DMP - - but they're just oscillating there, and I'm assuming that's the instrumentation thing, but -

CC-H That - that's affirmative. They're all safe; there's no problem with them at all.

DMP Okay.

CC-H Okay, we're about to go over the hill here at Orroral, and we should have you after blackout through ARIA.

20 53 21 DMP Roger.

21 11 18 CC-H Apollo, Houston. Talking at you through ARIA.

DMP ... 610.

CC-H I could hear you, that was it.

ACDR The computer is steering it right out, Crip.

CC-H Rog, Tom. You're - you're breaking up and unreadable at this time.

DMP ..., Crip.

21 12 02 ACDR ... backed off *** baby's steering it right out.

21 13 38 ACDR Okay, altimeter's coming off the peg.

CC-H Roger.

21 13 41 ACDR 0.9 of a mile miss distance; key in VERB.

CC-H Copy that.

21 13 44 ACDR Oh, pardon me, 0.7; this baby is right on. 45K.

CC-H Okay. It's all looking good here; we got data and we got - got you in radar contact at the ship.

21 14 10 CC-H Okay, Apollo. You're looking super here. You're coming up on your main time and - on drogue time, rather, and - so, see you tomorrow - or the day after tomorrow.

21 14 35 CC-H They've got you on TV.

21 15 00 ACDR Coming down at 11 000.

21 16 01 REC *** and my position is 025 degrees. I am on the New Orleans, 169 degree radial, 7.5 nautical miles.

NEW New Orleans; Roger. Out.

REC Apollo, Recovery. Over.

REC Apollo, this is Recovery broadcasting in the blind. Switching to Astro voice, secondary.

21 16 50 ACDR Coming through *** feet.

REC Apollo, this is Recovery broadcasting in the blind. No reception on Astro voice secondary, but we have you in sight visually; you have three good chutes at this time.

21 17 11 ACDR Roger.

REC New Orleans, Recovery's latest bearing is 025 degrees. I am on New Orleans 150 degree radial, 5.5 nautical miles.

NEW New Orleans, Roger. Out. And we have a good picture. Over.

REC This is Recovery; Roger.

21 17 42 SWIM New Orleans, this is Swim. I have a beacon bearing
200; I'm on 020 at 13.

NEW New Orleans, Roger. Out.

REC And Swim has a tally on the command module.

21 18 05 ACDR Okay. Passing 600.

21 18 27 REC CONTACT.

END OF TRANSCRIPTION